

# WILD ANIMALS EVERY CHILD SHOULD KNOW

JULIA E. ROGERS





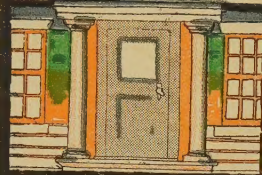


MAT + COLE



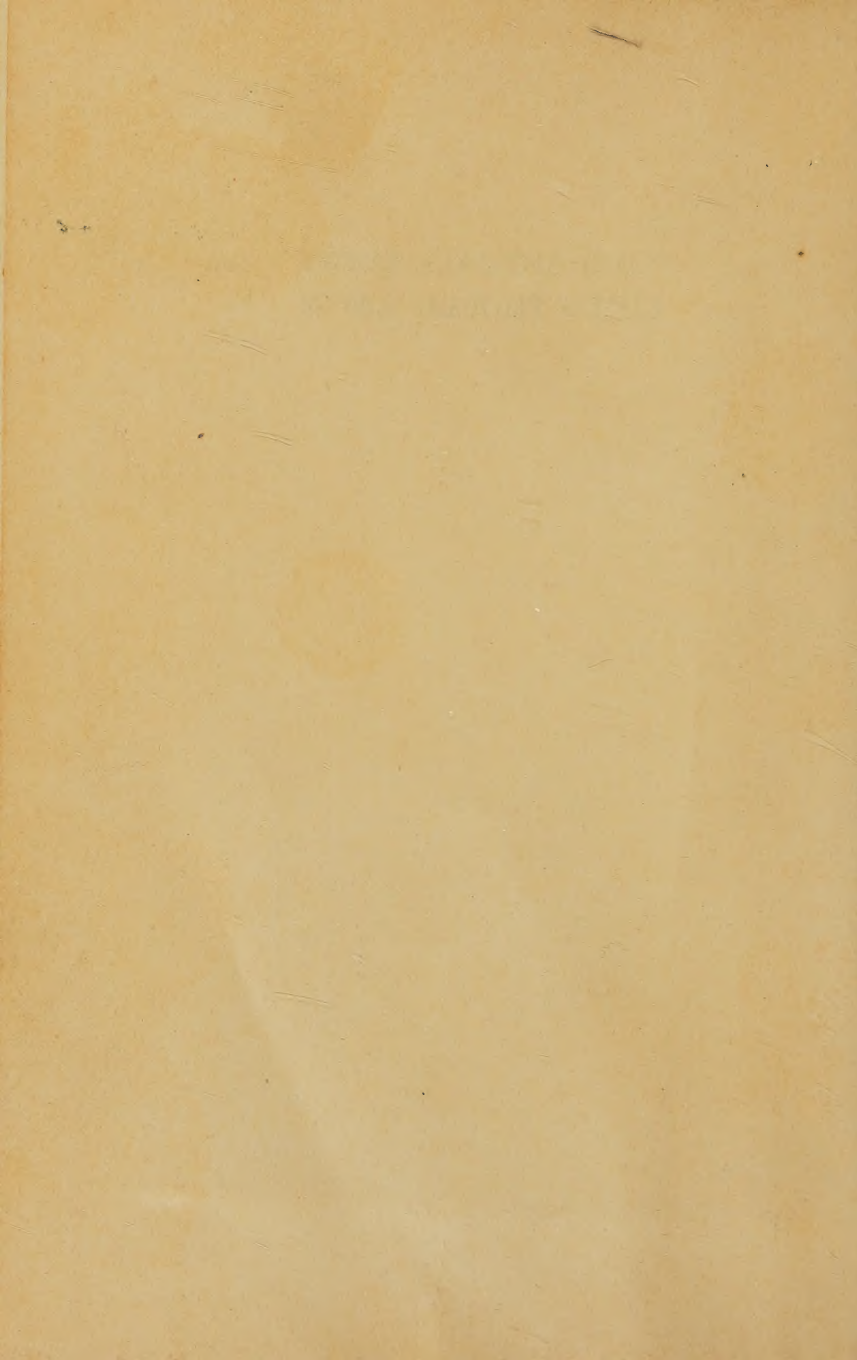






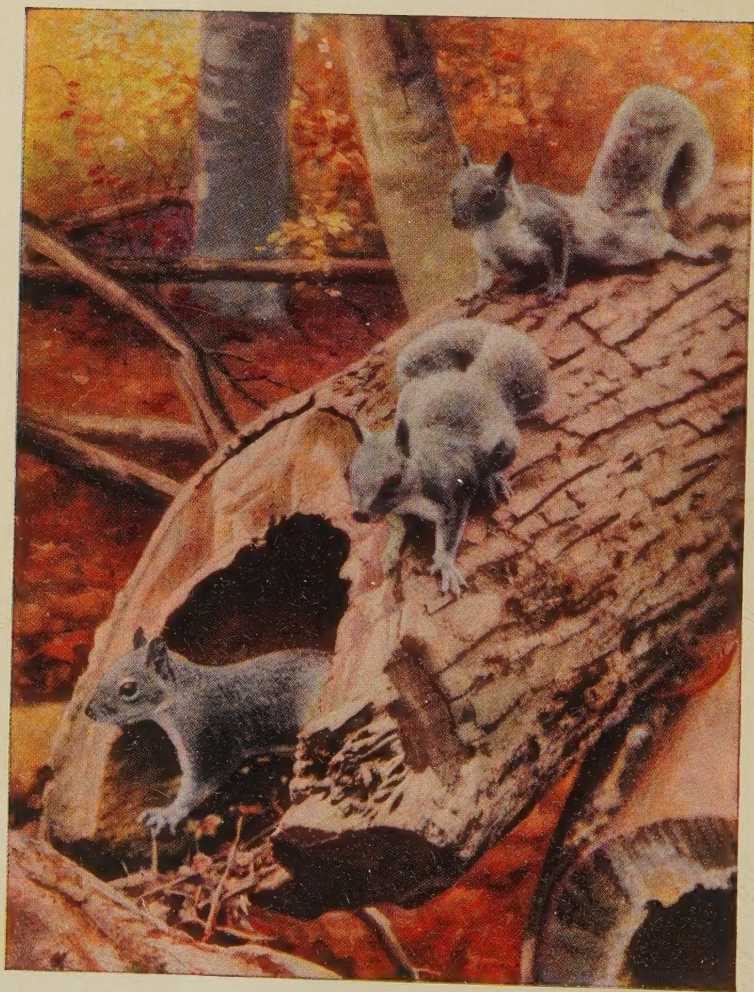
THIS STAMP BRINGS THE  
MILL WORK CATALOG  
WHEN ATTACHED TO ANY  
MAIL BEARING YOUR NAME  
SEARS, ROEBUCK & CO.  
CHICAGO

WILD ANIMALS EVERY  
CHILD SHOULD KNOW





Miss Jackie Johnson



The Squirrels—"time out o' mind the fairies' coachmakers."



# WILD ANIMALS EVERY CHILD SHOULD KNOW

LIFE STORIES AND OTHER TRUE STORIES OF THE WILD  
COUSINS OF DOMESTIC ANIMALS AND OTHER  
WARM-BLOODED QUADRUPEDES

---

---

BY

---

---

JULIA ELLEN ROGERS

AUTHOR OF "TREES EVERY CHILD SHOULD KNOW," "EARTH AND SKY EVERY  
CHILD SHOULD KNOW," "THE TREE BOOK," "THE SHELL BOOK," ETC., ETC.

ILLUSTRATED



NEW YORK  
GROSSET & DUNLAP  
PUBLISHERS

ALL RIGHTS RESERVED, INCLUDING THAT OF TRANSLATION  
INTO FOREIGN LANGUAGES, INCLUDING THE SCANDINAVIAN

COPYRIGHT, 1911, BY DOUBLEDAY, PAGE & COMPANY

THE COUNTRY LIFE PRESS, GARDEN CITY, N. Y.

## ACKNOWLEDGMENTS

Special opportunities for studying and photographing the animals at the New York Zoölogical Park were enjoyed by the author through the courtesy of the Director, Dr. William T. Hornaday. The portraits of many prominent citizens of the Zoo community are the work of Miss Celetta May Green, whose patient efforts, when the subjects did not feel like posing, deserved the success that finally came. The admirable life histories in Ernest Thompson Seton's "Northern Animals" have helped greatly, as has Dr. Hornaday's "American Natural History," Dr. Witmer Stone's "American Animals" and Mr. Dugmore's "Camera Adventures in African Wilds."





## CONTENTS

|                                               | PAGE |
|-----------------------------------------------|------|
| A Glance over the Field . . . . .             | xv   |
| The Family Tree . . . . .                     | xvii |
| The Orders of Living Mammals . . . . .        | xx   |
| The Families of the Orders . . . . .          | xxi  |
| <b>PRIMATES: ANIMALS WITH HANDS</b> . . . . . | i    |
| The Man-like Apes . . . . .                   | 3    |
| Baboons and Tailed Monkeys . . . . .          | 8    |
| The Monkey's Toothache . . . . .              | ii   |
| <b>CARNIVORA: THE FLESH-EATERS</b> . . . . .  | 15   |
| <i>Wild Cousins of the Cat</i>                |      |
| The King of Beasts . . . . .                  | 17   |
| The Ways of Man-eating Lions . . . . .        | 25   |
| The Tiger . . . . .                           | 30   |
| An Exciting Tiger-hunt . . . . .              | 34   |
| The Leopard at Home . . . . .                 | 37   |
| The Leopard's American Cousins, the           |      |
| Jaguar and Ocelot . . . . .                   | 40   |
| The Hunting Leopard . . . . .                 | 42   |
| The Caracal . . . . .                         | 44   |
| The Mountain Lion . . . . .                   | 45   |
| The Canada Lynx . . . . .                     | 54   |
| The Wildcat, or Bay Lynx . . . . .            | 56   |
| The Hyenas . . . . .                          | 58   |

|                                      | PAGE |
|--------------------------------------|------|
| <i>Wild Cousins of the Dog</i>       |      |
| The Gray, or Timber Wolf . . . . .   | 60   |
| Two True Wolf Stories . . . . .      | 65   |
| The Coyote or Prairie Wolf . . . . . | 68   |
| Foxes of Many Colours . . . . .      | 72   |
| The Skulking Jackal . . . . .        | 80   |
| <i>The Marten Family</i>             |      |
| The Marten . . . . .                 | 81   |
| The Mink . . . . .                   | 84   |
| The Weasel . . . . .                 | 90   |
| The Fisher . . . . .                 | 95   |
| The Otter . . . . .                  | 98   |
| The Skunk . . . . .                  | 103  |
| The Badger . . . . .                 | 109  |
| The Wolverine . . . . .              | 112  |
| <i>The Bear Family</i>               |      |
| Bear Traits . . . . .                | 116  |
| The Grizzly Bear . . . . .           | 121  |
| The Black Bear . . . . .             | 128  |
| April News about Bears . . . . .     | 132  |
| The Imprisoned Bear . . . . .        | 137  |
| The Brown Bears of Alaska . . . . .  | 143  |
| The Polar Bear . . . . .             | 146  |
| The Raccoon . . . . .                | 150  |
| A Coon Hunt in Texas . . . . .       | 153  |
| MARINE MAMMALS . . . . .             | 159  |
| PINNIPEDIA: THE FIN-FOOTED MAMMALS   | 159  |
| CETE: THE WHALES . . . . .           | 159  |
| SIRENIA: THE SEA COWS . . . . .      | 159  |
| The Mammals of the Sea . . . . .     | 161  |



|                                         | PAGE |
|-----------------------------------------|------|
| CHIROPTERA: THE BATS . . . . .          | 170  |
| The Bats . . . . .                      | 171  |
| A Bat which had a Grievance . . . .     | 182  |
| RODENTIA: THE GNAWING MAMMALS . . .     | 185  |
| <i>The Squirrel Family</i>              |      |
| Our American Squirrels . . . . .        | 187  |
| The Red Squirrel . . . . .              | 190  |
| The Gray Squirrel . . . . .             | 196  |
| An Incident of Harvest Time . . .       | 199  |
| The Friendly Chipmunk . . . . .         | 202  |
| The Little Chipmunk of the Northwest    | 210  |
| The Striped Ground Squirrels . . .      | 213  |
| The Woodchuck at Home . . . . .         | 217  |
| My Pet Woodchuck . . . . .              | 223  |
| The Prairie Dog . . . . .               | 226  |
| The Flying Squirrels . . . . .          | 232  |
| A Night with the Night-flyers . . .     | 236  |
| <i>Other American Rodents</i>           |      |
| The Beaver . . . . .                    | 239  |
| The Beavers' Buildings . . . . .        | 244  |
| What the Beaver has Done . . . . .      | 251  |
| Rats and Mice . . . . .                 | 255  |
| American Rats and Mice . . . . .        | 257  |
| The Beaver's Little Cousin, the Muskrat | 260  |
| The Pocket Gopher . . . . .             | 265  |
| The Porcupine . . . . .                 | 272  |
| The Hares and Rabbits . . . . .         | 277  |
| UNGULATA: THE HOOVED MAMMALS . . .      | 281  |
| <i>The Animals with Hoofs</i>           |      |
| Family Traits . . . . .                 | 283  |

|                                                     | PAGE |
|-----------------------------------------------------|------|
| A. THE EVEN-TOED GROUP OF HOOFED MAMMALS            |      |
| Pete, the Hippopotamus . . . . .                    | 284  |
| Wild Pigs . . . . .                                 | 289  |
| The Collared Peccary . . . . .                      | 291  |
| <i>The Cud-chewers</i>                              |      |
| The Ruminant Stomach . . . . .                      | 295  |
| The Elk, or Wapiti . . . . .                        | 296  |
| How the Elk Changes his Antlers . . .               | 303  |
| The Moose . . . . .                                 | 307  |
| The White-tailed Deer . . . . .                     | 314  |
| The Mule Deer . . . . .                             | 320  |
| The Reindeer and Caribou . . . . .                  | 323  |
| Reindeer for Alaska and Labrador . .                | 327  |
| The Zoo Giraffes . . . . .                          | 330  |
| The Prong-horned Antelope . . . . .                 | 335  |
| <i>Wild Cousins of Cattle</i>                       |      |
| The Bison, or Buffalo . . . . .                     | 339  |
| The Big Horn and Mountain Goat . .                  | 347  |
| B. THE ODD-TOED GROUP OF HOOFED MAMMALS             |      |
| Wild Cousins of the Horse . . . . .                 | 350  |
| The Black Rhinoceros and its White Cousin . . . . . | 353  |
| African Elephants at Home . . . . .                 | 359  |
| How the Elephant Makes a Living. .                  | 365  |
| The Indian Elephant . . . . .                       | 370  |
| How Wild Elephants are Caught . . .                 | 375  |
| MARSUPIALIA: THE POUCHED MAMMALS .                  | 381  |
| The Opossum . . . . .                               | 383  |

## ILLUSTRATIONS

|                                                                                   |                     |
|-----------------------------------------------------------------------------------|---------------------|
| The Squirrels . . . . .                                                           | <i>Frontispiece</i> |
|                                                                                   | FACING PAGE         |
| Lioness . . . . .                                                                 | 26                  |
| Bengal tiger . . . . .                                                            | 27                  |
| Leopard and jaguar . . . . .                                                      | 40                  |
| Mountain lion or cougar . . . . .                                                 | 41                  |
| (Photographed by A. G. Wallihan)                                                  |                     |
| Gray wolf . . . . .                                                               | 78                  |
| Red fox . . . . .                                                                 | 78                  |
| Mink . . . . .                                                                    | 79                  |
| (Photographed by C. C. Speight)                                                   |                     |
| Weasel . . . . .                                                                  | 79                  |
| (Photographed by W. E. Carlin)                                                    |                     |
| A skunk caught at one of his worst tricks . . . . .                               | 106                 |
| (Photographed by Ernest Harold Baynes)                                            |                     |
| Otter . . . . .                                                                   | 107                 |
| (Photographed by C. William Beebe)                                                |                     |
| Badger . . . . .                                                                  | 107                 |
| Bears . . . . .                                                                   | 134                 |
| (Photographed by Ernest Thompson Seton)                                           |                     |
| Black bear . . . . .                                                              | 134                 |
| Polar bear . . . . .                                                              | 135                 |
| Raccoon washing his food before eating it . . . . .                               | 150                 |
| "Say! Wouldn't dat 'possum mak yo' mouf<br>watah, jes' to look at 'im?" . . . . . | 151                 |
| California sea-lion . . . . .                                                     | 166                 |

## *Illustrations*

|                                                                                          |     |
|------------------------------------------------------------------------------------------|-----|
| Harbor seal . . . . .                                                                    | 166 |
| (Photographed by A. L. Prenticehorn)                                                     |     |
| Bat . . . . .                                                                            | 167 |
| Young red squirrels . . . . .                                                            | 196 |
| Young chipmunk . . . . .                                                                 | 197 |
| Prairie dog . . . . .                                                                    | 228 |
| (Photographed by A. R. Dugmore)                                                          |     |
| Gray squirrel . . . . .                                                                  | 228 |
| (Photographed by A. R. Dugmore)                                                          |     |
| Woodchuck . . . . .                                                                      | 228 |
| (Photographed by A. R. Dugmore)                                                          |     |
| A beaver and his work . . . . .                                                          | 229 |
| (Photographed by A. R. Dugmore)                                                          |     |
| White-footed or deer mouse . . . . .                                                     | 258 |
| Muskrat . . . . .                                                                        | 258 |
| Porcupine . . . . .                                                                      | 259 |
| Jack hare or "jack rabbit" . . . . .                                                     | 259 |
| (Photographed by A. G. Wallihan)                                                         |     |
| Molly Cottontail . . . . .                                                               | 259 |
| Pete, the Zoo hippopotamus, posing for a picture . . . . .                               | 292 |
| Collared peccary and armadillo . . . . .                                                 | 293 |
| (Photographed by A. R. Dugmore and C. William Beebe)                                     |     |
| A group of mule deer, suddenly aware of danger . . . . .                                 | 304 |
| (Photographed by A. G. Wallihan)                                                         |     |
| Prong-horned antelopes signalling with their cushion-like rump patches . . . . .         | 304 |
| (Photographed by A. G. Wallihan)                                                         |     |
| American elk . . . . .                                                                   | 305 |
| (Photographed by A. G. Wallihan)                                                         |     |
| The natural way for Juliet, the three-horned Nubian giraffe, to get her dinner . . . . . | 330 |



## *Illustrations*

|                                                   |           |     |
|---------------------------------------------------|-----------|-----|
| The giraffe, Romeo, eating grass                  | . . .     | 331 |
| Gnu                                               | . . . . . | 340 |
| Buffalo cow                                       | . . . . . | 341 |
| (Photographed by the New York Zoölogical Society) |           |     |
| Elephant                                          | . . . . . | 368 |
| Mother opossum and young                          | . . . . . | 369 |



## A GLANCE OVER THE FIELD

THE warm-blooded quadrupeds are rulers of the earth. The cave man was a wild beast, too, little better than his neighbours, until he made rude weapons and taught the wolf to help him in his hunting. From that time man has ruled the lower animals by his higher intelligence, and the skill of his hands. Count the wild beasts that he has made to serve him. The domestic animals and the cultivated plants have sprung from wild ancestors, tamed and improved through generations. The history of our race is interlocked with the lives of wild beasts.

Every boy and girl loves animals. In cities there are zoölogical parks with wild animals from far and near. Small menageries are a part of the circuses that appear in small cities at least once a year. The desire to go to see the wild animals is strong, and it ought to be gratified. The exhibits of trained animals are well worth seeing.

A collection of wild animals is, to most visitors, a jumble. This is unfortunate and

unnecessary. The warm-blooded quadrupeds are bound together by ties of blood. They are sprung from common ancestors, and the groups show their relationships. In the New York Zoo the buildings help one to get these relationships fixed in mind. The elephant house shelters also rhinoceros, hippopotamus and tapirs, all hoofed beasts with more than two toes. The lion house has all the giant cats — the tiger, lion, leopard, and jaguar.

The first chapters in this book explain what quadrupeds are closely related. They give a summary of the chief families in each order. In the chapters that follow are grouped together by families the big, fierce, beautiful relatives of our domestic animals.

Visits to the Zoo and menagerie will be one hundred times more interesting to the person, old or young, who grasps the few characteristics that distinguish the thirteen *orders*. With this equipment, it is easy to know where a strange animal belongs before his name is known.

We cannot know many animals in their wild haunts, even if we live in the country. The wilderness recedes from the homes of men, and the wild animals are shy. The average child is as likely to see an elephant



as a weasel running wild. It is the writings of the field naturalist and the hunter, especially if they carry cameras, which bring the latest news of the jungle and the desert. From them we learn how the tiger and elephant live their lives — what they do when the springs go dry, and when men hunt them for their striped pelt and ivory, or to save the crops and the lives of people.

No less interesting are the lives of the little mole and shrew — that hunt insects close under the cover of dead leaves and earth — when we come to know them well. Life is much the same to high and lowly: the struggle to live, and to defend against countless enemies, the precious offspring that shall perpetuate the race.

## THE FAMILY TREE

All the *classes* of the Animal Kingdom are like big limbs springing from the trunk of a tree. Some are larger limbs than others, and have more branches, and the branches more twigs. Some are stunted, and have few branches. They may die out in time, overshadowed by the more vigorous ones; others have done so.

One limb, Class *Mammalia*, the Mammals, has thirteen branches, coming off at different distances from the base. These branches are called *orders*. A few of these are stunted, and look as if they would die out. They are the old-fashioned orders, which have few representatives among living animals. The egg-laying mammals (Order *Monotremata*) represent the oldest, weakest branch that sprang from the parent limb. Close by Class *Mammalia*, the vigorous limb, Class *Aves*, the birds, leaves the trunk of the tree. Birds and egg laying mammals are alike in one important character.

Next to the old-fashioned egg-laying mammals is the order of pouched mammals, a little higher, but not much, for the young are born so small that they do not look like their mothers at all, but like little knobs, as they hang on the teats inside the pouch. Both of these branches (*Monotremata* and *Marsupialia*) are likely to die out. The animals live in Australia, with only a few remnants elsewhere.

The sea mammals, the three orders of the whales, seals, and sea-cows, are comparatively weak branches, with few divisions. They are not so likely to die out as those mentioned above. But they are not likely to grow stronger, as years go by.

Most vigorous branches loaded with twigs (called families) are the land mammals — the flesh-eaters, the gnawers, the hoofed order, and, ruler of them all, Man, one branch of the Order *Primates*.

In the tree of the Animal Kingdom, the human family is one of several families that compose the Order *Primates*. The order is a branch on the big limb, *Mammalia*. The families are all twigs along the branch. From some common ancestor sprang the families which form the order. The family of which Man is the sole representative exists alongside of the other families in its order. We count this twig the most important on the whole tree, because Man is the most intelligent animal. God has established Man as the master of the earth — ruler of the animal, vegetable and mineral kingdoms; ruler of the sea, the earth, and the air.

## THE ORDERS OF LIVING MAMMALS

- I. PRI'-MATES: The First Order. Man, apes, and monkeys.
- II. CAR-NIV'-ORA: The Flesh-eaters. Cats, dogs, bears, weasels, etc.
- III. PIN'-NI-PED'-IA: The Fin-footed Mammals. Sea-lions, seals, walruses.
- IV. IN-SECT-IV'-ORA: The Insect-eaters. Moles and shrews.
- V. CHI-ROP'-TERA: The Wing-handed Mammals. Bats and "flying-foxes."
- VI. RO-DEN'-TIA: The Gnawers. Beavers, hares, gophers, rats, squirrels, etc.
- VII. UN'-GU-LA'-TA: The Hoofed Mammals. Cattle, deer, sheep, swine, elephant, etc.
- VIII. CE'-TE: The Whale Order. Whales, dolphins, porpoises.
- IX. SI-REN'-IA: The Sea-cows. Manatees and dugongs.
- X. E-DEN-TA'-TA: The Toothless Mammals. Armadillos, sloths, ant-eaters.
- XI. EF-FO'-DI-EN'-TIA: The Diggers. Pangolins and armadillos.
- XII. MAR'-SUP-I-AL'-IA: The Pouched Mammals. Opossums, kangaroos, etc.
- XIII. MON'-O-TREM'-ATA: The Egg-layers. Duck-bills and echidnas.

# THE FAMILIES OF THE ORDERS OF MAMMALS

- I. PRIMATES. The order of animals with hands. All animals with hands and hand-like feet, of five fingers and five toes; thumbs more or less opposable.

*Families:*

1. Man.
2. Apes.
3. Old World monkeys.
4. New World monkeys.
5. Marmosets.
6. Lemurs.

- II. FERÆ, OR CARNIVORA. The order of the flesh-eaters.

Chiefly beasts of prey, with keen senses, quick motions, and fierce tempers, that catch and devour smaller animals. Sharp incisors, large eye-teeth for tearing, and cutting edges on the grinding teeth. Toes end in claws.

*Families:*

1. Cat. Walk on toes; claws retractile. Lion, tiger, leopard, jaguar, puma, lynx, wildcat, hyena.
2. Dog. Walk on toes; claws not retractile. Wolf, fox, jackal.



3. Marten. Active, long-bodied, short-legged; with scent glands. Otter, mink, weasel, marten: exceptional, skunk, wolverine, badger.
4. Bear. Walk on soles of feet; claws not retractile; omnivorous.
5. Raccoon. Walk flat-footed. Omnivorous.

III. PINNIPEDIA. The order of the fin-footed mammals.

Feet developed into paddles for swimming. Marine flesh-eaters, that subsist upon fish and mollusks; come ashore only at breeding season.

*Families:*

1. Sea-lion (including the "fur seal").
2. Seal.
3. Walrus.

IV. INSECTIVORA. The order of the insect-eaters. Soft-furred, small, long-nosed mammals, with feet padded and strongly clawed for burrowing underground.

*Families:*

1. Mole.
2. Shrew.
3. Hedgehog.

V. CHIROPTERA. The order of wing-handed mammals.

Animals with long fingers webbed to form wings. Diet, insects or fruit. The bats.

**VI. GLIRES, OR RODENTIA.** The order of gnawing mammals.

Chiefly small land animals, with strong, chisel-like incisor teeth in front. Feet with clawed or nailed digits. Diet vegetable chiefly.

*Families:*

1. Squirrel.
2. Beaver.
3. Mouse and rat.
4. Pocket-gopher.
5. Porcupine.
6. Hare and rabbit.

**VII. UNGULATA.** The order of hoofed mammals.

Terrestrial, herbivorous animals, of large size, with digits ending in broad, horny nails. Incisors often wanting in one or both jaws.

**A. Even-toed group.**

Sub-order of 4-toed animals.

*Families:*

1. Hippopotamus.
2. Pig.
3. Peccary.

Sub-order of 2-toed animals.

*Families:*

1. Camel.
2. Llama.

Sub-order of 2-4-toed animals (the cud-chewers).

*Families:*

1. Deer — 4-toed.
2. Giraffe — 2-toed.

3. Pronghorned antelope — 2-toed.
4. Cattle, sheep, and goats — 4-toed.

B. Odd-toed group.

*Families:*

1. Horse — 1-toed.
2. Rhinoceros — 3-toed.
3. Tapir — 3-toed.
4. Elephant — 5-4-3-toed.

VIII. CETE. The order of whales.

Carnivorous mammals of the sea, with hairless, fish-shaped bodies, and fish-like fins and tails, yet warm-blooded lung-breathers, that bear their young alive and suckle them.

*Families:*

1. Whalebone whale.
2. Sperm whale.
3. Dolphins and porpoises.

IX. SIRENIA. The order of sea-cows.

Clumsy, fish-like animals, with front limbs expanded into fins; hind limbs wanting. They live upon coarse grass in river mouths and shallow bays.

*Families:*

1. Sea-cow, or manatee.
2. Dugong.

X. EDENTATA. The order of toothless mammals.

Strange-looking creatures, covered with hair, or with overlapping horny plates, that roll up into balls for protection. Feet clawed,

fitted for digging or climbing. Feed upon insects, leaves or carrion.

*Families:*

1. Armadillo.
2. Sloth.
3. Ant-eater.

**XI. EFFODIENTIA.** The order of diggers.

Long, sharp-nosed, toothless mammals, with powerful claws with which they tear open ant hills, and then gather the ants on their long, flexible tongues.

*Families:*

1. Pangolin — India.
2. Aardvark — Africa.

**XII. MARSUPIALIA.** The order of pouched mammals.

Animals of low intelligence whose young are born in a very immature state, and carried in the pouch, where each is attached to a milk gland until able to climb in and out of the pouch.

*Families:*

1. Kangaroo.
2. Wombat.
3. Bandicoot.
4. Tasmanian wolf.
5. Opossum.

**XIII. MONOTREMATA.** The order of egg-laying mammals.

Lowest order, resembling the common ancestor

of birds and mammals. An Australian group of animals covered with fur or spines, with webbed feet and flat, horny, beak-like snouts. Young hatch from eggs laid in nests.

*Families:*

1. Duck-bill.
2. Echidna.



## PRIMATES

The order of animals with hands.

All animals with hands and hand-like feet,  
of five fingers and five toes; thumbs more  
or less opposable.

*Families:*

1. Man.
2. Apes.
3. Old World Monkeys.
4. New World Monkeys.
5. Marmosets.
6. Lemurs.



## ANIMALS WITH HANDS

### THE MAN-LIKE APES

THE monkey house at the Zoo, and the monkey cages of the travelling menagerie are never deserted by the eager, interested throng, until the lateness of the hour sends people home. The human-like looks and actions of apes and monkeys fascinate us all. We wonder what they will do next, and linger on to see. We tell each other that they must be thinking and reasoning, for they play tricks on each other, and seem to understand things in their world as well as we do in ours. Sometimes we cannot help saying: "How much this big baboon looks like Mr. So-and-So!" — which is true, even though it does not compliment the gentleman referred to.

The monkey tribe is next in rank to man, and both are branches of the same great order. Few people think to-day that men "have descended from the monkeys." Both have descended from common ancestors.

#### 4 *Wild Animals Every Child Should Know*

The largest of the three man-like apes is a West African tailless beast, the gorilla. He has a black skin, and walks erect, like a man; his legs are long; so are his arms, but when they hang down, they do not touch the ground. He is bigger in frame than a man, with a skeleton of much more massive bones. His strength is very great, and his temper as ugly as his face. This hideous black giant has twice the weight of a large man, and he looks even bigger than he is, for his body is covered with long gray hair. His jaws are the widest part of the head, and the teeth are weapons of terrible power in a fight. So are the hands. But the gorilla prefers peace to war. He is shy, and keeps to the thick jungle. In captivity, he is sullen, and soon dies. These animals are rarely captured or exhibited. In intelligence they rank far below the orang and chimpanzee. There is small room for brains behind those great eye sockets and that retreating forehead.

The other tailless, anthropoid apes are the chimpanzee and the orang-utan. The chimpanzee is black-skinned, with grayish hair, and has large ears. The orang-utan's skin is brown, his hair sandy red, his ears small. The chimpanzee inhabits the dense forests of

tropical Africa; the orang, the swampy border woods of Borneo and Sumatra. Their homes are the tree tops, through which they travel rapidly, swinging by their arms.

Both chimpanzees and orang-utans are intelligent and quick to learn. Some of them are given to fits of bad temper, but in this particular, as in their faces, they are like men. They are absurd little caricatures of people. This is their hold upon the crowd.

At the New York Zoölogical Park people begin to congregate about one o'clock at the corner of the Primate House, before the outside cage in which the trained chimpanzees and orang-utans are to dine at three. Long before the hour arrives all the standing room that commands a view is taken.

Promptly on the stroke of the clock the diners and their trainers come out.

"Howdy-do, Susie?" "Good afternoon, Polly!" and other greetings are gravely responded to by nods from the favourites named. The dinner is set out on the table, and the demure little animals seat themselves in their chairs, ready to begin. Their manners are excellent. They eat with forks and spoons from their plates, and drink from teacups, just as people do. One course after another,

## 6 *Wild Animals Every Child Should Know*

the meal proceeds, the trainer present, occasionally making suggestions, or giving directions, always cheerfully and quickly obeyed.

What do these creatures think about the people outside the cage bars, who sometimes laugh until they cry, to see the droll little mimics following rules of table etiquette, like well-behaved children? Every day a new crowd assembles, and the same hungry oranges and chimpanzees delight them with their clever use of knife and fork and spoon. Go and see them, and you will not wonder at the popularity of this corner every summer day.

On a hot afternoon I met a crowd in front of the lion house, and soon saw in their midst the "monkey man," leading Mimi by the hand and carrying Susie, who had an arm affectionately thrown around his neck. They had been very good all day, and were going to have some ice cream soda as a reward. They sat up on the high stools and enjoyed their treat as much, and in the same way, as the boys and girls on the other stools. Especially did they like to see their reflections in the mirror back of the counter.

From the refreshment house they started home; but Susie complained, and was not happy until her keeper turned into a side



path that led to the pony stalls. But it was not a ride that she wanted. She got a five-cent piece, by some teasing, and eagerly exchanged it for a box of candy at a small booth, kept by a smiling young lady.

Did Susie want a ride? She did not. The keeper tried to set her on the saddle worn by the Shetland pony. But she clung tighter to his neck with one arm, while she reached out the other and pushed the pony away, repeating the action several times. The pony, used to pushing and poking, was patient enough, but the boys and girls laughed long and loudly, and Susie rewarded the "monkey man" for taking her away by giving him a piece of candy as they started home, the day's adventures over.

## BABOONS AND TAILED MONKEYS

THESE tailed animals do not stand erect. *The baboons* have long, dog-like noses, huge eye-teeth, and marvellously strong-clawed hands, with which they rend the bodies of their victims. In East Africa they live among the rocks and in tree tops, and prey upon various animals, among them the flocks of the native herdsmen. They go in droves, and devastate the grain fields. If the people are timid and unarmed the baboons become bold, entering the villages and killing human beings. They savagely attack and tear to pieces any dogs that come their way. Only guns and other deadly weapons stay their attacks, and make them wary.

If a "gorilla" is on exhibition, it probably is a baboon, misnamed. Look for the tail. No gorilla has a tail. The average baboon weighs less than fifty pounds, and stands ("on all-fours") about two feet high at the shoulder. He is all for a fight, and even the lions are afraid of him.

More than a dozen kinds of baboons live in Africa, and none elsewhere. The Mandrill, with red and blue markings, is one of the most remarkable of them all.

*Old World monkeys* are numerous in kinds and widely distributed in temperate and tropical Asia and Africa, and on the East Indian Islands. Some kinds are counted sacred in India, and are never harmed. No Old World monkeys have grasping tails. Some have very short tails, but none are tailless. They have little resemblance to the man-like apes.

*New World monkeys* are noted for their long, grasping tails, characteristic of the most important families. In Mexico the small-headed spider monkeys swing themselves through the tree tops with amazing speed, their long slim bodies scarcely bigger than the long legs and tails.

The long-tailed, weazen-faced little monkey the handorgan man sends around to collect pennies in his velvet cap is probably a Sapa-jou, and sighs for the forest home in Central America, where he was captured and brought to New York to be trained and then sold into slavery.

The collection of swinging-tailed monkeys

has many and wonderful little creatures in it, but they are not hardy. They die young and have constantly to be replaced.

The delicate little *marmosets*, a long-tailed, silky-haired family, and favourites as household pets, are from Central and South America. They are the smallest animals in the monkey tribe.

The *lemurs*, the lowest family of the Primates, are known by the long, pointed muzzle, large eyes, long tail and coat of long, silky hair. The feet and hands prove them monkeys; the teeth would not. They are gentle little creatures, curiously interested in the crowds that pass them every day, and they seem to have forgotten that, "back home" they were due to sleep by day. Thirty different kinds of lemurs are found on the Island of Madagascar. Several different kinds are usually exhibited, as they are not difficult to take care of, and they live peaceably, even when different kinds are put into the same cage.

## THE MONKEY'S TOOTHACHE

IS IT because monkeys are so much like people that we laugh at them? We put on a broad smile when we turn toward the monkey house at the Zoo, because we shall need it the moment we enter the door. The people who arrived before us are laughing. We join in the merriment before we can see what it is all about.

One crowd stood before the cage of two orang-utans, convulsed with laughter. The tears were running down their cheeks, and they were actually reeling from side to side, some of them — sedate people, too, who tried to control themselves, but couldn't. I was told that a monkey with the toothache was the cause of all that mirth, and I was ashamed of the heartlessness displayed. I wished that each person could have the monkey's toothache, and be caged for the monkeys to laugh at, if they could do a thing so impolite, which I strongly doubt.

I elbowed my way through the crowd, to get a glimpse of the suffering creature. A

moment later, I was laughing with the others. I couldn't help it, and I forgot all about what bad manners it was.

Mrs. Orang had mentioned that she had a slight toothache, to be sure, but it was not a severe case. She was evidently pleased that Mr. Orang had heard her remark, and had promptly and politely expressed his sympathy. When I arrived, the two were sitting quietly in the front of their cage, on the floor, her head resting confidently on his ample bosom. Both were rolling their eyes about, as if intent on some distant prospect, far over the heads of the crowd in front. These they took no notice of.

One little wincing stir on her part called attention again to Mrs. Orang's alleged toothache, and most gently, but with a bored and unconvinced expression, Mr. Orang proceeded to investigate. His long fingers grasped her two jaws, and opened her mouth wide, *wide!* Holding it as wide open as possible, he turned his head so as to give his left eye the best chance to explore the rows of teeth. Her head was turned and twisted, as well as his own, so that a good view of each tooth was gained. Then his right eye was used in making a thorough survey of the teeth.



Not a sign of a toothache was discovered after all this careful investigation, and he cuddled her against his hairy breast, as a person might comfort a fretful child. His expression of countenance seemed to say: "But haven't I looked now for the seventh time, with both my eyes? You concede that it is not a bad toothache, but don't you think I would detect it by carefully *looking* if it were big enough for you to *feel*? I am convinced that you imagine this one, but I will keep on looking for it, if that gives you any satisfaction."



## CARNIVORA

The order of the flesh-eaters.

Chiefly beasts of prey, with keen senses, quick motions, and fierce tempers, that catch and devour smaller animals. Sharp incisors, large eye-teeth for tearing, and cutting edges on the grinding teeth. Toes end in claws.

*Families:*

1. Cat. Walk on toes; claws retractile. Lion, tiger, leopard, jaguar, puma, lynx, wildcat, hyena.
2. Dog. Walk on toes; claws not retractile. Wolf, fox, jackal.
3. Marten. Active, long-bodied, short-legged; with scent glands. Otter, mink, weasel, marten: exceptional, skunk, wolverine, badger.
4. Bear. Walk on soles of feet; claws not retractile; omnivorous.
5. Raccoon. Walk flat-footed. Omnivorous.



## WILD COUSINS OF THE CAT

### THE KING OF BEASTS

**T**HE LION of the desert is as different from the ordinary house cat as a big boulder is from a pebble. Yet it belongs in the same family, and the moment we begin to look for signs of such relationship, we find them in abundance. The teeth and claws are the most important features. The cat will let us examine her teeth. At the Zoo we must stand outside the bars, and await the king's pleasure. But it is not long till he opens his mouth. He yawns and shows all thirty of his teeth at once, the chief ones being the eye-teeth, just as in pussy's mouth. Three above and two below, the teeth just back of the long, sharp eye-teeth, have the perfect action of a pair of scissors. The eye-teeth tear, the next ones cut. There is little grinding expected of the back teeth, for but one tooth on each half-jaw is provided. Instead of chewing, all cats cut and then swallow their food. Notice how the lion eats,

when feeding time comes. The front of the mouth is provided with six flat teeth on each jaw. But the cutting work is done with the side teeth, almost entirely.

Five toes on the fore-feet and four on the hind-feet are armed with strong, curved claws, that are drawn back at will into sheaths. Under each toe and under the ball of the foot is a naked pad on which the creature walks noiselessly. The rest of the palm and sole are hairy.

Watch the lion at his meal for more cat-like traits. He crouches low, and whips his tail from side to side, as the cat does when it has caught a mouse. He growls, as if warning others to let him alone. If another lion or a man approaches, or makes any attempt to touch his food, a snarl and a roar express his bad temper. A cat "makes night hideous" sometimes, but the noisiest of all cats is the lion, which knows that its voice terrifies all other animals. It seems to express the joy of living by roaring all through the night.

The lion's mane is one of the distinctive traits of the genus. It is worn only by the male, and maneless males are often seen. Long, thick, curling hair covering the head and fore-quarters gives, a look of majesty to this giant cat which is not shared by any maneless crea-



ture, however splendid in size and strength. The tuft on the end of the tail conceals a peculiar horny nail, whose use no naturalist seems to be able to explain. The colour of lions is tawny yellow, shading to much darker hue on mane and tail. The bases of the ears are black, and so is the tail-tuft. In the same litter are individuals with light and dark manes.

The long hair on the belly is found only on lions in captivity. The superb manes of caged lions are not matched by those of the lions of the wilderness. The life of the chase wears off this great fur collar. Creeping through matted jungle reeds, and thickets of thorn bushes, and lying by day in rocky lairs offer the free lion few of the luxuries he enjoys in a sumptuous lion house, where meat is served him promptly on the stroke of the clock, each day, and water when he needs it, and he could not, if he would, ruffle his coat very badly on the smooth walls and floor. In fact, the captive lion looks fat and lazy, very well content to live a life of ease, and let the passing crowd look at him, exchange words of admiration, and pass on.

A lioness is never so gentle as when her pretty kittens take up all her time, and she

is never so terrible as when defending them from harm. They are very active and playful, like any other kittens, but more independent from the first, for they are born with their eyes wide open, and so miss the days of helplessness that common kittens have. Two or three is the usual number of lion cubs born at once; sometimes it is four. They are March or April babies.

We might not take them for lions at first sight, they are so thickly covered with woolly coarse hair, distinctly barred with dark brown bands that encircle the body, and dark spots on the limbs. The tawny ground colour is almost hid by the decorations. When the males are full grown these stripes and spots have almost disappeared, and the females retain them only on the limbs. Leopards and jaguars and tigers, all barred or spotted (or both) through life, are a closely related group of the giant cats. Somewhere back along the line of its ancestors the lion, too, can claim close relationship with the ancestors of the group named above. Every litter of lion cubs tells the story of such a common ancestry, even though the plain colouring of their parents argues against it.

The mother lion soon adds flesh to the milk

diet of her babies. It is not wonderful that they are eager learners of the art of stalking game. At six months, they go out with the lioness by night, and by the time they are a year old the mother is looking on, and no doubt criticizing the captures made by the youngsters. More zeal than skill is used by these inexperienced cubs, for they mangle their prey unnecessarily, and earn many a parental cuff for poor workmanship.

For some reason, fewer male lions grow to maturity than females. It is common to see lions in groups of one male with two or three females. Groups of a dozen or more are often banded together for the rounding up of game — a plan that benefits them all. The two parents go out for game, when there are young cubs in the lair. Two males have been partners in more than one man-eating campaign.

The terrific force of the blow a lion can strike is not exaggerated, but hunters say that a lion does not kill by striking. A blow on the back will disable a large animal, and prevent its running any farther. With one paw on the shoulder, the other on the nose, the lion drags its victim down, and despatches it by a bite on the neck. When the attack is a rush

in front, as is the lion's method with large antelope, the rearing creature is apt to break its neck by a backward fall, if the lion fails in its first attempt to reach the throat. Hornless animals and small deer are bitten on the back of the neck. The entrails are neatly removed through an opening made in the flank, and buried, before the feast is begun.

If water is close at hand the lion drinks often during a meal. If not, a long draught of water is taken after a full meal and before retiring to the lair. One drink a day is enough. The early morning or late evening are the times that hunters expect to find lions coming to the water holes.

The carcass that is too large for a single meal is dragged to a suitable place, and there covered with leaves or other rubbish by its rightful owner. Then he drinks and retires for the hours of daylight. Night is the time for lions. They are nocturnal beasts. The twilight calls them out, fresh and invigorated, and hungry.

The lair may be a burrow under a long windrow of tall grasses. Or it may be hidden by the thick growth of reeds in a swale, or in an impenetrable jungle of thorny scrub. On dull, wet days, lions are restless, and often reveal their hiding places by muttering and

moaning. Only in regions undisturbed by hunters do lions sleep near their "kill."

The roaring of lions is one of the terrible sounds, especially when the beasts that utter them are at home on the open, sandy stretches of the borders of desert country, where they are masters of all creatures except armed men. The roar of several lions, uttered in concert, makes the earth tremble, and the air vibrate with the force and volume of the sound. Especially terrifying is such a concert when the forest is lashed by a sudden tropical storm, with frequent blinding flashes of lightning cleaving the darkness, the king of beasts adding his voice to the wild tumult of the elements above him. Quite as loudly does the lion roar on dark, frosty nights, when the silence seems to magnify by contrast the uproar he makes. This boisterous outburst of sound strikes terror to the quaking hearts of the lesser beasts. The ominous silence that follows the roaring means that the lion is noiselessly stalking a victim.

In the lion house at the Zoo the crowds of people shudder at the voices of lions that occasionally utter angry roars behind the bars. Travelling showmen prod Leo in his cage, to make him roar for the satisfaction of onlook-

ers, many of whom have never seen a lion before. But lions bred in captivity, and tamed, have lost the spirit of wild creatures. They will "roar you as gently as any sucking dove," perhaps, and you go away thinking that a lion's roar is not so much of a roar as you had expected. It is the African hunter who knows that it is the most awe-inspiring sound in nature.

## THE WAYS OF MAN-EATING LIONS

A LION does not like a man. He resents his presence in the neighbourhood. If a man and a lion meet suddenly on the trail, the lion usually retires, after seeing that the man keeps a brave front. A growl and a flourish of the tail show the beast's ill-nature. If the creature is hungry, or if it be a lioness with cubs at home, the hunter must shoot, or meet the spring that means death. Of lions in South Africa, Mr. F. Vaughan Kirby wrote in 1899: "Lions are justly dreaded at night, when they become bold, fierce and aggressive; and as they generally make use of game tracks, or footpaths when moving, the risk of walking along these at night in lion-infested districts is very great. A lion is seen at his best (or worst) when at bay, standing with lowered head and crest erect, his tufted tail twitching, his lips drawn back from the red gums, showing the great white fangs, and living fire flashing from his eyes, while he keeps up an incessant hoarse growling. No animal can look



more utterly savage, and the sportsman who faces him must 'hold straight.' To follow a wounded lion into thick covert is a dangerous proceeding, and calls for the utmost coolness and nerve, as the animal invariably sees the sportsman before it is seen by him, and in most cases it charges."

Colonel J. H. Patterson, the engineer in charge of the construction of the Uganda Railroad, brought three thousand coolies from India and distributed them in various camps along the route. Two lions had their dens near the line of camps, and these shrewd creatures terrorized the workmen by taking a coolie nearly every night for nine months, in spite of all protective measures, and attempts to kill them.

For years these beasts had preyed on the domestic animals of timid tribesmen, and an occasional human victim made them more bold, and whetted their appetites. The coolies were paralyzed with fear, and the lions took advantage of this fact.

Early in the evening the roaring began, as the lions circled the camp, and gradually drew near. Then came silence, during which one of the beasts acted as watcher, while his companion managed to creep through the fence



The lioness lacks the shaggy mane, but in dignity she is the equal of her mate



Largest and most regal of the giant cats is the Bengal tiger

of dense thorn bushes, and enter a tent for his nightly victim. Once he sprang through the tent door and carried off the mattress instead of the man that lay upon it. In another dash, the lion got his claws upon a bag of rice, which he abandoned after carrying it some distance. But these mistakes did not often happen.

The beating of tin pans, and the sight of flaring torches had no effect upon these desperate hunters, and no fence withstood their strength and cunning. They went from one camp to another, and so the few men brave enough to use a gun against them could never know where to expect them. At length, deciding that caution was not needed, the two lions acted independently, and the number of victims was doubled. The coolies refused to work, and those who stayed in the camps slept in trees, on top of water tanks and in other elevated places. Then only, did the lions notice the baits that had been put out for them. And then they were shot from platforms. Never was a coolie taken as he worked at railroad-building by day.

The strength of one of these lions was equal to dragging a mile a half-length of rail, weighing two hundred and fifty pounds, to which

were tied two full-grown goats, besides the one he killed.

Male lions weigh about five hundred pounds; they measure between nine and ten feet in length, and stand forty inches high at the shoulder. With all their strength, they do not carry their prey clear of the ground, but drag it. They leave off climbing as they grow up, and instead of leaping over fences and other barricades they make their way through them. The ability to spring forward is not outgrown. A spring of twenty feet from a slightly elevated bank is probably an unusually long one.

The natural range of the lion extends from Africa through Syria and Persia to India, where they are now restricted to the Gir Forest of the Khatiawar district. Where savage tribes only are their human neighbours, lions can hold their own. But civilized man not only makes war upon the lions with deadly firearms and good marksmanship, but he kills and drives out of the country the wild game on which lions depend for their food. South Africa once had a distinct tribe of lions of its own, larger than the Barbary lion of the North and marked by its remarkably long and thick black mane. It is now extinct,

and lion-hunting in the region is long past. The fierce Barbary lions are becoming very rare in the states of North Africa. Lions still roam in the eastern and western states. East Africa is a favourite resort for lion-hunters now.

## THE TIGER

DO YOU remember, at the very beginning of "The Jungle Book," that little Mowgli, the man-cub, took refuge from Shere Khan, the Big One, in the wolf's cave? The mother wolf adopted him, and as he grew up, and the beasts made friends with him, Shere Khan, the tiger, was his enemy still, and intended one day to kill him. But his wolf mother, when she named him, made a prophecy: "Lie still, little frog. O thou Mowgli — for Mowgli, the Frog, I will call thee — the time will come when thou wilt hunt Shere Khan as he has hunted thee!"

And she reminded him often, in later years, that the striped cat was his enemy, treacherous and determined. And each of his friends among the jungle people warned him in turn to remember the vow the tiger had vowed. But Mowgli *would* forget, because he was born a man-cub, and when he was reminded, he would say: "Shere Khan is all long tail and loud talk, like Moo, the Peacock."



But in spite of forgettings, he learned his lessons. He went down into the valley, and brought the red flower (fire) to the Council Rock, and with it he made Shere Khan turn coward before all the jungle people. The tiger went away to let his singed coat grow out, and Mowgli went to the valley to live with men. Then with the two gray wolves' help he led the buffalo herd into the ravine, the cows and calves up one way, the bulls coming down the other. In this trap Shere Khan woke to meet death under the trampling hoofs of the stampeding cattle. And in the evening twilight Mowgli got the great gay skin off, and, with Akela and Gray Brother following, went back to the jungle; and under the light of the stars he spread the tiger skin on the Council Rock.

It is a glorious story, and you will all read it again for yourselves, and keep right on, for the book is not one to lay down, until it is finished.

Largest, most regal and most deadly of jungle people is the giant cat with black and yellow stripes. In the lion house at the Zoo the Royal Bengal tigress, Eva, walks noiselessly back and forth in her cage. The beautiful queen of the jungle is captive, but untamed.

When she walks, when she sleeps, when she is fed, when she makes her careful toilette after a meal, she is a cat always, in every feature, and action.

When one of the two big, playful Siberian tigers in the larger outdoor cage lies on the rocky ledge against the painted background of mountains we can get some idea of how these giant cats look among their native rocky dens. Once in a while one suddenly leaps down and swiftly rushes across the floor, as if to capture one of the admiring boys who stand outside the rail. The wire wall of the cage complains as the beast plunges against it, and the people draw away in a hurry. The tiger walks haughtily back, quite ignoring the small panic he has created. Is it his little joke? Or is it merely to exercise his muscles that he makes this demonstration?

A ten-foot tiger's skin is about as fine a trophy as a hunter can bring home. Why did not Mr. Dugmore or Mr. Roosevelt bring back one from their African hunting trips? Not a few people ask them this question. It is disappointing to know that neither party got so much as a snapshot of a tiger, though lions were abundant. The answer is easy: *There are no tigers in Africa.* They belong

in India and neighbour countries. One must go into Asiatic jungles to find tigers at home.

Few of us can get closer to a tiger at home than reading the stories that returning hunters tell. But menageries give opportunities of seeing caged animals, as fine as ever roamed the jungle. The trained, performing lions and tigers exhibited by Bostock and Hagenbeck and others, show how human patience and skill have made the most savage of beasts the meek servants of men; more often, of frail women. Never miss an opportunity to see them!

## AN EXCITING TIGER-HUNT

**A**N ENGLISH hunter, visiting a friend in Amoy, China, was delighted to hear that up among the hills tigers were numerous. He was eager to try his luck at hunting "stripes." So several Chinese hunters were sent out to make observations, and they soon located a place where tiger signs were numerous. The hunters rode with their guide to the foot of a low range of hills, and climbed up the sides to a small Buddhist temple, where they slept that night. Early morning found them ready, for it is the tiger's habit to roam by night, and return with its prey to the lair before the sun is up.

With field glasses the hunters scanned the rocky hill tops for moving forms. Directly one was sighted, and the keen-eyed Chinese scouts kept their eyes on the creature, to see what cave it went into. It was their pleasant duty next to explore the cavern and to find out if it had any other doorway. The Englishmen waited outside, and in a few minutes their

allies returned, saying that there was no back door, and that they had located the lair of a tigress with kittens.

No more savage creature lives than a tigress defending her young. The plan was to go into the den after her, instead of meeting her in the open. I do not know whether the native method pleased the Englishmen. If it didn't, they concealed their qualms, and followed the yellow men, who were brave enough, and carried spears and lighted torches. The hunters flipped a coin to see who should shoot, and in they went, stooping to avoid overhanging rocks, and squeezing through narrow passages, where their rifles had to be poked in first, the men crawling after them. Ten minutes of this travel into the terrible darkness, with a man-eating tigress ahead! What a situation! Yet the hunters followed the plucky torch-bearers, and made sure that their guns were ready for instant use.

At length they halted in an open space about ten feet across. The torch-bearers pointed forward, and there crouched the tigress, her cubs beside her. As the hunter leaned forward, the creature made her spring before he could pull the trigger. The rush of her coming put out the two flaming torches,

but the second hunter fired just as the tigress bore down the man in front, on whom her attack was made. One awful moment followed. The man who had fired was on the ground, his feet pinned under the tiger's body. He heard the Chinamen fumbling to light the torches. It took a few seconds, which seemed to him like hours. The light showed the first hunter bleeding badly from the tiger's claws, stunned and terribly bruised by the force of the onset, which carried him over backward. The tiger was dead. What might have happened in that crowded little room, had the second hunter been as slow to fire as the first one? What if his aim had not been true?

The answer is left to you.

## THE LEOPARD AT HOME

**I**N THE Zoo, and by a more cramped cage in the travelling menagerie, we need no sign to tell us the name of the giant cat, the true panther, which is known the world over by its spots. They are black on a tawny ground colour, small and of solid colour on the head and legs; but on the back they are as big as the palm of a man's hand, and irregular in outline, the centre tawny. These patches are called "rosettes." Between them the paler colour forms a network of irregular mesh. "Black" leopards show more black than yellow, and in all the colours gradually lighten from the dark band that lies along the spine to the pale underparts. Leopards all black show the spots in certain lights, like the pattern in watered silk.

In a cage the leopard walks proudly and with noiseless step. But no chance is given in captivity for it to show its natural powers, its fleetness and grace when running, its cunning in stalking its prey, and in "melting into



the landscape" when it must avoid being seen. Its hunting time is the dead of night. At twilight and at dawn, when lions are abroad, the leopard is safe in its lair. Sometimes one creeps out and lies motionless in the sun on some rocky hill near the hidden den. The leopardess with her family of three or four kittens may even play in the sun, relying on the spotted, pebbly ground to conceal them all from view. If hunters are about, or any other human, the mother probably knows it, and the family sun bath is put off until the way is clear. From her animal neighbours, the leopard has little to fear.

In the hills and on the grassy plains the shepherds live an anxious life, because of the leopards, which come long distances to steal sheep and goats out of their flocks. The lion roars a great deal; the leopard is a silent beast in comparison, uttering its hoarse, piercing cry but seldom, and then repeating it in the same key, several times. Oftener, it utters low, complaining grunts. The scream expresses unusual excitement.

Silent, flattened on a rock close to a water hole, the leopard waits for thirsty creatures that come down to drink. Sometimes two hunt together, and spring at the same instant

upon the throat of the victim, if it is a large animal. They make no sound in this murderous assault, and the victim dies from the severing of the jugular vein — a swift, merciful death. In the hill country of Africa, monkeys, bushbuck and smaller animals are their usual prey.

It is perfectly easy for a leopard to chase monkeys through the tree tops; climbing is one of its natural accomplishments. Oftener it slips upon them when they are asleep and there is no chance for escape. A lion loses its victim, if the creature can climb a tree. The leopard follows it.

The largest African leopards are found in the north and east. They weigh less than a man, but measure six feet or more in length.

## THE LEOPARD'S AMERICAN COUSINS —THE JAGUAR AND OCELOT

AMONG Mexican visitors to the woods of Texas and Louisiana, the fierce jaguar is one of the least welcome, as it is also one of the least common. It is the New World's leopard, a splendid creature, often seven feet long, spotted and rosetted with black, on a rich, yellow ground, in a larger pattern than the leopards wear; *each rosette has a black spot in the centre*. The jaguar has a large head, and is a burly creature, but what it lacks in grace and agility it makes up for in strength. With one bite on the back of the neck "Señor Lopez" instantly killed a full-grown female the moment she entered the cage in the New York Zoölogical Park. They had been neighbours for two days, and while separated only by their cage bars, no unfriendly feeling had been shown. But the male jaguar had no mind to share his cage with a stranger, and he expressed his determination in a tragically cruel manner.

The ocelot is a smaller black-and-tan spotted cat, which occasionally strays into Texas from the tropical forests of Central America. Its rosettes are run together in such a way as to form horizontal or diagonal bands of black and yellow. The legs are spotted, and the tail ringed with black.

This animal is about half the size of a jaguar, and weighs much less. Its natural prey is small game and birds. It lies among tree branches, and pounces on its victim from these vantage points.

In captivity ocelots seem comfortable and happy far north of their natural homes. They live outdoors all winter, and rear their young in the Zoo at the Bronx, New York City.

## THE HUNTING-LEOPARD

**F**LEETEST of all cats is the cheetah, called the hunting-leopard. It is not a leopard, though it looks like one. The black markings of its tawny coat are solid, not rosetted, and the paler throat and under parts are not spotted. The chief characteristic of the animal is the fact that its claws cannot be completely drawn back into a sheath; this takes it out of the cat family, proper. In appearance it is a tall, thin, slender leopard, with coarser hair than most, shaggy on the belly, and rising in a ridge like a short mane along the back, and forming a ruff on the shoulders.

Wherever the lion is found, the cheetah also lives, though they do not depend upon each other, in Africa or Asia.

A hunter in the Transvaal describes the life these animals live among the foothills of the mountains. He often saw them out in daytime. They feast as soon as they kill. Two usually hunt together, stalking the unconscious prey, then dashing up, as it becomes alarmed

and starts off. The fleetest antelope has no chance. The cheetahs, without any special effort, gain upon the desperate victim, which seems to realize the hopelessness of flight. One leap and the throat is seized. The struggle is short.

The farmer and native villagers suffer losses of sheep, calves and goats, by the cheetahs. One hunter, resting by his horse at midday, waked from a nap to find two hunting-leopards stalking his horse.

The young cheetahs caught by hunters are readily tamed, and trained to hunt like dogs. The younger the cubs are taken the more docile they are. But a cheetah trained by its mother is always a more successful hunter than one trained by men.

## THE CARACAL

A BEAUTIFUL African relative of the lynx is the caracal, whose pointed ears, black outside and lined with white, end in a long, erect, spreading pencil of hairs. The body is three feet long, slender and graceful, the legs long, and the tail reaches nearly to the ground. This cat's fur is brownish-red, paler beneath, close and fine.

The creature is one of the swiftest cats, running as fast as the hunting-leopard. It is able to capture almost any animal up to small deer. Taken young, it is trained to assist in hunting, which it seems to enjoy greatly. It is so quick that it can strike down pigeons feeding on the ground, a dozen at a time, before they can rise. And often it will kill at a blow a bird flying past, though it has to spring to a height of six or eight feet to reach it.



## THE MOUNTAIN LION

**H**ERE are some of its other names: cougar, puma, panther, "painter." This great cat will be recognized by this description: body tall, flat-sided, about five feet long and tail three feet; fur close, thick, pale reddish or yellowish-brown, darker along the back and tail; underparts dingy white, face gray.

In all the woodsmen's tales our grandfathers heard, if they were boys in the mountainous or forest regions of the Eastern states, the thrilling moment was likely to be the one in which the piercing scream of a "painter" fell upon the ears of the hunter. If the pioneer families were safe behind the barred doors of their log cabins, they were anxious for the safety of the calves and colts in the barnyards, to which the giant cat might get access by its cunning. A hungry panther, with young ones in some cave near by, under the roots of a tree, or in a washed-out hollow among the rocks, must keep on hunting until it can strike down and carry home an animal big enough for a square meal.

Times have changed. The pioneer's rifle was always ready to defend his stock from marauding "varmints." The "painter" was one of the worst of these, hated especially because it was silent in its approach, and almost uncanny in its ability to "fade away," once it was sighted by a man. Possibly panthers would once have attacked a man, but they learned, as the country became more thickly settled, that man was their arch-enemy. He shot the deer, which were the panthers' chief prey. The forests were destroyed by fires and by lumbermen, and gradually wild beasts disappeared. Farms and cities have taken the places of the woods where deer and panthers and bears and Indians once ranged and lived their lives, without a thought of the great changes that were coming.

To find the cougar now, one must go West, where mountain wilds offer homes and good hunting to big beasts of prey. There will be room for them for years to come in the vast stretches of broken country that reach from Canada to Mexico. The only retreats left in the Eastern states are in the Adirondacks and in the wildest parts of Florida. In the Bad Lands of Wyoming and Montana the stock-raisers still suffer losses. A hungry cougar

will sometimes attack a horse or a cow; full-grown moose and elk have fallen victims to the same intrepid hunter. Deer and mountain sheep are its preference. Doctor Hornaday says that it preys upon every living creature that can be killed and eaten, except man. The antelope, fleet beyond words, is too swift for it, I suppose, and has wonderful endurance in flight. All of the cats rely on the first dash to take their prey, and have no liking for a long chase.

It is a queer fact that a mountain lion will run up a tree when chased by a dog, even though it is more than a match for its pursuer. This gives the hunter his chance for a shot, for which he would have waited a long time, had he tried cougar-hunting without the dog.

Mr. Enos Mills, who knows the Colorado mountains as well as any man, and who hunts with a camera, instead of a gun, tells what occupied his thoughts during his solitary tramps over the snow-covered range in the dead of winter.

“The tracks and records in the snow, which I read in passing, made something of a daily newspaper for me. They told me the news of the wilds. Sometimes I read of the games the snowshoe rabbits had played; of the starving

time among the brave mountain sheep upon the heights; of the quiet content in the ptarmigan neighbourhood; of the dinner that the pines had given the grouse; of the amusements and exercises on the deer's stamping ground; of the cunning of the foxes; of the visits of magpies, the excursions of lynxes, and the red records of mountain lions.

"The mountain lion is something of a game hog and an epicure. He prefers warm blood for every meal, and is very wasteful. I have much evidence against him. His worst one-day record that I have shows five tragedies. In this time he killed a mountain sheep, a fawn, a grouse, a rabbit, and a porcupine; and as if this were not enough, he was about to kill another sheep when a dark object on snowshoes shot down the slope near by, and disturbed him.

"The instances where he has attacked human beings are rare, but he will watch and follow one for hours with the utmost caution and curiosity. One morning, after a night journey through the woods, I turned back and doubled my trail. After going a short distance, I came to the track of a lion alongside my own. I went back several miles and read the lion's movements. He had watched me closely. At every place where I rested he had crept

up close, and at the place where I had sat down against a stump, he had crept up to the opposite side of the stump — and I fear while I dozed!”

With all its strength and cunning, the cougar has earned the reputation of being a great coward. The Indian panther (which is the black leopard) is no better fitted to succeed, yet it never hesitates to attack human beings. The difference is probably this: the timid, unarmed people that live in the outskirts of the jungles regard the wild beasts with awe and superstition. The American Indians shot their enemies with arrows, and the white men that followed the Indians were bold and unforgiving hunters, armed with deadlier weapons than those of the Indians. Through generations, mountain lions have learned that striking a man brought surer, swifter vengeance than taking his fat pigs or calves. What we call cowardice, the cougar mother may teach her spotted cubs is plain common sense, the only rule of self-preservation in their world.

I saw a big mountain lion give a strange exhibition of temper one day. She was in one of the side cages of the small mammal house at the New York Zoo. A stream of people went through on this winter day, and

the big cat was quietly snoozing on a shelf near the top of her cage. She yawned and stretched like a house cat when she waked, and was washing her face and licking her paws very deliberately, when, of a sudden, her muscles stiffened, she crouched for a spring, whipped her tail from side to side, and flung herself at some person or thing in the open passageway. Of course she struck the cage bars and they threw her back. Whining, she crouched on the floor, and a fierce, hissing snarl expressed the anger that she felt. We all stopped to wonder at this outburst, and to learn its cause. Nobody could tell, until we saw that her glances were all directed to one lady. Every move she made stirred the wrath of the cougar. Around her neck she wore a raccoon collar, with the head and tail of the animal coming around to the front. It was those glassy eyes and pointed snout that took the cougar's eye. Everybody became interested at once, including the raccoon lady and her friends. A little shaking of the raccoon tail or head caused the cougar to snarl and hiss, and make up the wickedest of faces at us. Finally the lady took a quick step forward, and this struck terror to the cougar's heart. Drawing backward so suddenly, the



great cat lost her balance, and did a back somersault, quite without intending to. The laughter this provoked seemed to anger the creature still more. She snarled and hissed us all out of her sight, but we would not go fast enough. The lady with the 'coonskin collar moved away, but even at a distance, the beast kept her eye on the object of her wrath. Coming slowly back, the lady took a sudden step toward the cage again. This time the cougar uttered a piercing scream, dropped her tail, and slunk out of the back door and refused to enter the cage, as long as the lady stayed.

Dr. C. Hart Merriam says: "The distance a panther can pass over in a single leap is almost incredible. On level ground, a single spring of twenty feet is by no means uncommon. On one occasion Mr. Sheppard measured a leap over snow of nearly forty feet. In this instance there were three preliminary springs, and the panther struck his deer on the fourth. The longest leap measured by Mr. Sheppard was one of sixty feet, but here the panther jumped from a ledge of rocks about twenty feet above the level upon which the deer was standing. He struck it with such force as to knock it nearly a rod farther off.



"The deer cuts so deeply into heavy snow drifts that the poor animal can make but slow progress. At such times a panther, by spreading the toes of his great broad paws, simulates a man on snowshoes and sinks but a short distance in the snow. He thus gains a vital advantage over his prey, and will give chase to and capture one that he missed on his first spring. Under no other circumstances will a panther pursue a deer, for he is too well aware of the uselessness of an attempt to overtake so fleet an animal.

"Immediately upon killing one, he drags it bodily into some dense thicket where he will not be likely to be observed. He has thus been known to drag a full-grown deer over a hundred feet before reaching a satisfactory covert.

"Unlike the wolf, he makes the most of his prey, devouring it before killing another. One deer generally lasts a panther a week or ten days, and during that time he may usually be found within a mile of the carcass, hidden under some log or uprooted tree. When all but enough for one or two meals has been eaten, the panther, especially if a female with young, will often make another hunt, but, if unsuccessful, returns to the remains of the old carcass."

The ordinary cry of a puma is a sort of mew, on a larger scale, and more prolonged than that of the domestic cat. The male growls when disturbed, and gives vent to unearthly cries, at times. It is false to say that human-like cries are uttered to lure hunters to destruction. Multiply caterwauling by five to ten, and you have the vocalization of the mountain lion.

## THE CANADA LYNX

**L**ARGE, fierce cats, with long legs and short tails, are lynxes. Our two American species are easily distinguished. They have many traits in common — traits that belong to the family — stealth and cunning, ability to climb, persistence of grip once the savage claws are sunk into a victim at the end of a sudden, well-aimed spring.

In the dark forests of the North, the shy, sullen-tempered Canada lynx lives his hard life, for life is always a fierce struggle in the cold regions of deep snows. This creature is about three feet in length, with a stub tail only a few inches long. The legs are heavy and long, and the feet unusually large and thickly haired all over. The fur is gray with just a hint of warm red in it. The pointed ears are ornamented with tufts of long, stiff, black hairs. The tip of the tail is black.

On the ground this animal travels by long, awkward bounds. It prefers to lie, quite concealed from view, on the horizontal limb of

a tree, ready to spring upon any bird or beast that passes below. Rabbits are the staple prey. A good rabbit year always means plenty of lynxes, so the hunters say. Grouse are favourite birds. Any animal it can conquer is its victim. Deer and caribou, if taken at a disadvantage, may be bled to death before they can escape the tenacious, cut-throat lynxes, that usually hunt in pairs when big game is involved. Foxes and lynxes are constantly in conflict, and the cats win the fight. Pigs and lambs are stolen from the farmyards of settlers, in the half-light at both ends of the day.

## THE WILDCAT, OR BAY LYNX

**T**HIS cat is as big as the Canada lynx, but not so heavy. Its feet are small, its body more lithe and graceful, its colour a warm reddish-brown, streaked and mottled in various patterns. No tufts adorn its ears. The tail is a bit longer, and banded; the face as handsome as ever a cat has.

Wherever there is broken, mountainous country with open woods left in the United States, there still lives the wildcat, and the cottontail, on which it chiefly depends for its food. No wonder it can take life less seriously than its sombre cousin of the bleak North.

In a rocky den the kittens are born — little, furry, blind things, like the babies of your house cat in looks and actions, as they grow up. And the savage mother is just as tender and devoted to her little ones as old Tabby. After a few weeks of nursing the kittens, she brings in mice and small birds, and not long after they acquire the taste for blood, they learn how to catch such animals, and

are out hunting for themselves. Wildcats do not imitate human beings in their night calling, as some superstitious people say they do. Neither are they in league with the Evil One. They are wild creatures engaged in a struggle to live.

When trailed by dogs a wildcat goes up the nearest tree, giving the hunter his chance for a shot. But sometimes the cat descends suddenly and despatches the dog whose incessant barking exasperates her.

When a wildcat is met suddenly, she is quite as startled as the man in front of her. Self-defense is the first impulse of each. The cat humps her back, bristles her long fur until she swells to twice her natural size. Her eyes blaze, she growls and spits, the picture of fury. Quick as a flash she will fly at the man, and sink her claws into his face and neck, unless he meets her attack with a blow of a heavy stick. A good dog is the best friend an unarmed man can have at such a time. Doubly ferocious when wounded, a wildcat will carry a steel trap with her in springing upon a person who ventures to approach her.

Wildcats are the only savage beasts left in Great Britain. They are still able to hold their own in the wildest mountainous parts.

## THE HYENAS\*

THE meanest members of the cat family are the striped and spotted hyenas, whose characters are well known the world over. Like a leopard in strength, but a sneaking coward, a hyena is dreaded as well as despised. The strength of its jaws is past belief; once it sinks its great teeth into flesh it eats bones and all, crunching and swallowing the hardest parts, even of the big joints.

A hyena does not match his powers with beasts of his own size, but is alert to find injured or sick ones. Then he is brave as a lion — unless approached by a beast that is sound.

The victims of the sleeping sickness live for months, able to go about, but enfeebled, and waiting for death. Hyenas recognize the weakness of these men, and attack them with the utmost ferocity. Children are snatched from the native tents, and sleeping men have been maimed or killed.

---

\*The hyenas are intermediate between the dogs and cats, having characters of each family. Their nearest relatives are the civet cats. Their claws are not retractile.



But ordinarily the hyenas skulk about, lying in the reedy hollows by day, following the hunting lions and leopards by night, to pick up what is left of their feasts, or the remains of carcasses not so recently killed.

Let a hunter approach, and the hyena becomes a skulking coward again. A little dog will scare off a hyena three times its size. But an aged lion, after treating them with contempt all his life, usually falls a victim to hyenas at the end.

The "laugh" of the hyena is a cackling series of shrieks, howls and chuckles. When hyenas assemble in numbers, waiting for a lion to finish his feast, they make night hideous with their chorus.

Like the disgusting wolverine in Canada, the hyena has an enormous stomach, and is a glutton. Mr. Roosevelt found one howling in a trap of his own making. The carcass of an elephant lay on its side. The hyena had crawled inside, and gorged himself until he could not climb out. Gnawing an opening in the abdomen wall, he forced his head through but the elastic muscles drew tightly around his neck, and he was caught.

## WILD COUSINS OF THE DOG

### THE GRAY, OR TIMBER WOLF

**H**E IS a great gray dog with dog-like actions as well as looks, that we see walking about his enclosure on a rocky hill side at the Zoo. Occasionally a difference of opinion between him and his cage mate will make the bristles on the neck rise in anger, but none of the fierceness of the frontier wolf is seen among these comfortable captives, nor any of the shyness that belongs to the native of the far off northern forests, or the Bad Lands of Dakota. In the back of the yard are the dens where they sleep, and every day at a certain hour a man comes to feed them. Have they forgotten all they ever knew of the wild life led by their kind?

On the steppes of Russia, and even in wilder portions of Germany and France, fierce wolves of the same species as ours still terrorize travelers. Sledges on long drives across the snow fields are followed and attacked by wolves that travel in packs and act together, to save

their strength and accomplish the capture, then share the prize.

Such experiences with famished wolves came to the early settlers in the woods of Canada and many of the states. These wolves lived also on the plains where the buffalo roamed. And in and out among the grazing or resting animals, the wolves slipped like gray shadows at twilight or by night, managing to get young calves separated from the others, and to drag them away without risking too much. The horns of an enraged buffalo that pinned a wolf to the ground were deadly weapons.

Hunting the buffalo bulls was wolves' sport, it is true, but it was the pack against the solitary buffalo, at a safe distance from the herd; or the cow, alone with her young calf, whose hiding place she circled and defended till the persistent dogs wore out her strength, and their patience had its final reward.

The deer were the natural prey of the timber wolves before men came. These fleet animals they hunted by a series of relays, so that co-operation made up for the comparative slowness of the pursuers. When settlers came they, too, preyed upon the deer, and frightened them away. It is a kind of necessary revenge that the wolves turned upon the flocks of the sheep-

men, and the calves and colts of the ranchmen and cattlemen, considering them their rightful prey, and quite as good as the deer. All the vengeance of these injured pioneers expressed itself in shooting, trapping and poisoning their enemy. Dogs were maimed and killed by their wild cousins with the terrible teeth and iron jaws. The fur market paid good prices for the skins in winter, and a bounty on wolf scalps made it profitable to bring them in at any season.

Gradually the hunted wolves learned that men with guns are enemies they cannot defeat in open fight. They know that distance must be kept between them. So the skulking habit has developed. Few people to-day can catch a glimpse of a wolf, even in regions where they howl at night, as if the woods were full of them and their tracks in the snow give reasonableness to the belief. They have learned to keep out of traps, no matter how cleverly they are laid, and to sniff poison, however it is disguised. With his wits about him, the wolf is more than a match for his human neighbours in many sparsely settled regions of the country, and the tribe is multiplying and thriving.

Five to thirteen cubs, usually half a dozen, are born in a bare, unlined den, in early spring.

They are suckled by the mother, and she is dependent upon the father, who hunts for the whole family. By all that I can learn, there is a good picture of the home life of these animals in "The Jungle Book." It makes our hearts warm toward them. But the wolfish nature of wolves shows when old Akela misses killing his buffalo, and the young ones turn traitors and forget all his years of devotion to the pack. So the hunter in our own country knows that when one of the pack is old, or by accident disabled, his own brothers will fall upon and devour him. Captive wolves have been known to devour their mates, and even their cubs. The cannibal wolf we despise, but we have a deeper feeling of this sort for the cowardly creature which will desert her own cubs in the face of danger. This is the meanest cowardice of all.

Yet individuals differ. We would not like the race of men to be judged by the deeds of the meanest and weakest among us. The mother love is the strongest and best thing in wolves. The mother devotes her strength to the nourishing of her numerous cubs, and when they are able to go out with her, she shows them how to make their own way safely in their world. This means getting experience

of all the dangers that beset the way, with Man as a neighbour, and all the difficulties of scarce, and always fearful, beasts upon which they depend. But though life is so serious, there is time to play, as a dog does with her puppies. And there is neighbourliness with other wolves, and sometimes even helpfulness to the unfortunate. Mr. Seton tells of a hunter who shot a wolf, but couldn't find her den. Next week he tracked another she-wolf to her den in a hollow log, and shot her at the door. Crawling in, he found six very small cubs and seven much larger. He believes that this kind neighbour adopted the orphans of the wolf first shot, and was nursing the thirteen — a big, but noble, undertaking.

When the cubs first come out to play in front of the door of their den they are likely to be snatched by watching eagles. As they grow up they are liable to diseases, the worst of which is hydrophobia. A mad wolf runs through the pack, snapping at all that it can reach, just as a mad dog does in the street.

Up North, the sledge dogs are half wild; sometimes timber wolves are taken when very young and trained; sometimes one parent is a wolf. The best dogs of the team are these half-breeds, some drivers think.

## TWO TRUE WOLF STORIES

I HAVE heard at first hand many stories of fierce timber wolves. The pioneers were brave who faced these dangers when they settled the new states of the West. A farmer in Minnesota spent one winter day cutting wood in his timber tract two miles from home. As he came out into the road with his axe, ready to go home, he heard an ominous yelping, and by the time he reached a suitable tree and climbed up into it, a pack of half a dozen ugly wolves had come bounding down his track, and were jumping and snapping angrily at his heels, and their cries were making the silent woods ring. As darkness came down, the eyes of the disappointed but persistent brutes glowed like live coals, and they took revenge upon the man they could not reach by chewing the hickory handle of his axe until it was so shredded and split as to be useless. Two hours this siege lasted. Then the wolves began quarrelling among themselves. I have heard woodsmen say that when wolves



are foiled in their purpose they turn upon their leader. Perhaps the pack were taking revenge upon the one who led them into this long and apparently useless hunt. At any rate, they moved off, snarling and fighting, and finally the man in the tree dared to slip to the ground, and run for his life. He reached home safely, the wolves having apparently forgotten him in their own quarrel.

Another story of a thrilling escape from wolves comes as a personal experience from a man who forty years ago was a young surveyor in the wilds of Minnesota. Coming through the woods one morning he heard the cry of a wolf behind him, and looking back among the trees he saw the gaunt creature not twenty rods away. No doubt it was surprised when he shouted at it for it turned back and was silent a little while, and the frightened youth made the best speed possible in the supposed direction of the camp. But the howling, answered by other wolves, came nearer, and before long the man looked back over the little swamp and saw three wolves coming along on his trail, sniffing the ground at intervals and uttering short yelps of satisfaction. Knowing that he might starve to death or freeze if treed by the wolves, he decided not

to climb a tree, there in the deep woods, where no one could hear him call.

As he ran on, he passed a clump of birch trees and, stopping, tore off an armful of the curling bark. Piling more on this first bundle, he touched a match to it. In a moment he had left behind him a big bonfire flaming up, right on his trail. When the wolves came up to it they lost their tempers completely. The fleeing man heard their cries of rage and disappointment. Evidently the fire barred the wolves from following any farther. The trick that saved him was suggested by seeing the birch bark. The man had never heard of bonfires as a defence against wolves. It was an inspiration. Probably no other plan that he could have resorted to would have saved him.

## THE COYOTE OR PRAIRIE WOLF

**S**LENDERER in build and smaller, with fox-like ears and muzzle, the coyote is the "little brother" of the gray wolf, and has many of his traits, as well as some that are strictly his own. Being a tawny gray with brown trimmings and pale linings, so to speak, the body of this desert dweller makes very little display against the ashy-brown earth, with its neutral-coloured, scant vegetation, and scattered rocks. Twilight brings out the pack, yelping, whining, howling, as if life were a hopeless business, and the coyotes had no expectation of capturing anything. Fortunately for them, the earth is honeycombed with the winding burrows of mice, ground squirrels and other small rodents. Rabbits hide in the brush, but they are numerous enough to furnish a large proportion of the fare of the pack. Frogs, snakes, birds and their eggs, any animal living or dead, is meat for these fellows. And they go home at daybreak well fed.

Home may be a badger's slanting burrow,

made wider and deeper for the accommodation of the new tenant. Usually it is dug by the pair, the doorway being sheltered by bushes. The nest is an enlarged chamber, with an air-shaft which communicates with the surface of the ground, three feet or more above. It is likely to be an old gopher hole.

In the nest, five to eight young ones are born in April, and as they grow up both parents are busy gathering enough to feed the family. The cubs soon form the habit of watching on high points near the den for the return of the old ones, welcoming them with squeals of delight if they bring in a good supply. If alarmed while they watch, the cubs slide into the den, and each may hide in a side pocket he has dug in the wall of the main passage.

The happiest times in a little coyote's life is when the time comes to go hunting with the old ones. By October the family disbands, and the youngsters must rely on their skill at hunting as winter comes on.

All through this trying season, when snow covers up the little rodents that sleep underground, traps and poisoned baits are set for wolves, and guns are loaded to protect the stock on which the coyotes prey from necessity. \* Dogs are not dangerous enemies of

coyotes. They are not quite a match even for the lightweight wolf. But all his skill the coyote needs to elude Man, his arch-enemy. The fact that his tribe increases is proof that he is as clever as men are.

The settler in the dry prairies of the West may not suspect that the wise little coyote does him more good than harm. But if he is fair-minded and observant, he will find that this is true. Meadow mice, pocket gophers, and prairie dogs are his prey. Squirrels and rabbits are relentlessly pursued. If such supplies are scarce, the cheerful little prairie wolf fills himself with crickets and grasshoppers, which he may supplement with a dessert of wild plums.

The deep, long howl of a timber wolf is very different from the short, sharp, high-pitched bark of the coyote. This animal barks for pure pleasure, and it is the only animal that habitually barks. The other members of the dog family bark under certain circumstances, but this fellow shows no such reserve. "The dawn song is a long, smooth, musical note," says Seton, and I quote him further.

"Two or three coyotes will meet each night on a certain elevated place to sing. They have several of these recognized choir lofts, but

they never use the same one on two nights in succession. Sometimes on dead-calm moonlit nights, each coyote gets up on his singing perch and pours out his loudest and finest notes. This is passed on from one point to another, till the whole mountain seems ringing with the weird music, and from its very wildness, and the vast stretch of the country that is concerned, the effect is truly impressive."

Enos Mills tells of an evening he spent alone by his campfire on the Colorado mountains. "All that evening I believed in fairies, and by watching the changing firelight kept my fancies frolicking in realms of mystery where all the world was young. I lay down without a gun, and as the fire faded to black and gray, the coyotes began to howl. But their voices did not seem as lonely or menacing as when I had had a rifle by my side. As I lay listening to them, I thought I detected merriment in their tones, and in a little while their shouts rang as merrily as if they had been boys at play. Never before had I realized that coyotes, too, had enjoyments; and I listened to their shouts with genuine pleasure."

## FOXES OF MANY COLOURS

**R**EYNARD is a friend we all met in story books long ago. He is a selfish little cousin of the dog, quick to learn and to profit by his lessons. The things that prove to be mistakes he does not repeat. He studies to outdo his enemies by using the wits he has. His reputation for slyness does him credit, though it vexes the persons or the beasts with whom he plays the game. But as it is the game of life or death to him in most cases, who blames him? Try to get the fox's point of view. As civilization advances, and the wilderness is encroached upon from every side, only the sly foxes survive in the great struggle for a living, and a place to live.

How shall we recognize the foxes? They are smaller than the wolves, with bushy tails more than half the length of the body, sharp muzzles, long, pointed ears held erect, cat-like slits as pupils of the eyes, and the teeth of a dog. The long, thin legs end in slender, sharp claws, that have some retractile action. Four toes behind



and five in front, all dogs have. The fur of foxes is soft and long.

In America two tribes are found: the Red Fox Group and the Gray Fox Group. The Southern states are the home of the gray foxes. They differ in California from those in Texas and Florida, as members of one species will in widely separated parts of a big country. But all are gray above, rusty brown beneath, smaller than their near relatives of the Northern group, and very spry on their feet. It is said that a fox "down South" will climb a tree as readily as a 'coon, when the dogs get close on its trail.

The red fox is the type, or pattern, that gives its name to a large group of species, and to several forms of its own, ranked as sub-species of the red fox, found from Virginia to Alaska. It is reddish-gold in colour, paler in treeless regions, brightest red where it lives in dense forests. White on the inner sides of the legs, tail-tip, and throat, and black on the feet, legs and ear-tips, give contrast to the prevailing rust-red hue. The longest, thickest hair is on the Alaskan skins, the furriers tell you, and you understand why that is true.

Often a mother fox has among her kitten-like babies one which does not look like the others,

when they exchange their leaden colour for the characteristic red coat they will wear when grown up. This odd one may be black. Or it may have a cross of dark colour on the shoulders, and a black tail, while the main colour is gray. The "black fox" and the "cross fox" are colour variations to which the red fox is subject.

The sly neighbour that looks down at the ducks and geese in the pond with such interest from the top of a little hill, at a safe distance from the house and barn, is the same fox, several generations removed, which stole the Christmas goose on which our Puritan forefathers intended to celebrate their midwinter holiday. In a few days your own choice of the flock may be taken by strategy more subtle than that the colonists marvelled at. Times have changed. You cannot set a trap that your neighbour will put his foot into. His sense of smell is so keen that he knows a poisoned bait; any taint of human touch means danger.

A fox does not seem to be afraid of people; it recognizes that trickery will win where an open encounter would mean sure death, and a cowardly surrender of territory would not mend matters for himself. A hunter is often followed by the very fox he is after. The sly

fellow never risks discovery, but always calculates how he can slip behind some stump or stone, or settle into a background of brown leaves so like his coat in colour that he will never be seen.

It is foolish to watch the roost that lost a fat hen last night. True, the fox will be ready for another chicken dinner to-night, and again to-morrow. But it is neighbour Jones, a mile or more down the road, and then the Smiths, farther away, that are visited, not you.

Sometimes a fox meets an unexpected reverse of fortune. A flock of geese came squawking home from an excursion into the fields, the gander behind the rest, his attention on a fox which hadn't quite bravery enough to attack, as the head of the flock was an unusually fine bird, and plucky beyond the ordinary. The fox was patiently biding his time in spite of the powerful wings, lifted threateningly in his direction whenever he drew nearer.

Round and round the fox circled, and nearer and nearer the contending forces came to the farmyard. The farmer heard the noise, saw what was the matter, and ran into the house for his gun. When the fox got out of line with a goose, the farmer brought him down. Though only wounded, the fox was at once attacked

by the gander, which leaped upon its enemy, beat it violently with both wings, tweaked its throat with an angry beak, and in other ways expressed its vindictive feeling toward the hereditary foe of young geese.

Mr. Seton quotes an interesting fox story sent him from Auburn, N. Y. When her nest in a hollow under a tree was discovered and the cubs handled by a man, the mother fox took them, one by one, before another day passed, to a new home. The man returned, but found the hole empty. The light snow recorded a most interesting story. After deciding upon the new place, the mother came and took one cub, by a roundabout way, to the spot. Returning for each one of the remaining eight, she avoided the path she made before, but always went in a long, curving course that started in exactly the opposite direction from the goal she sought. The time consumed by this method might have been very precious, and the method costly, if the man had come sooner. But she succeeded, and was allowed to bring up the youngsters she worked so hard to save.

Claws and teeth are not foxes' only weapons when they meet in a fight. The tail arches forward, and becomes a fender-off of the onsets

of the adversary, and its hairy tip confuses him by brushing his eyes.

In the Far North the tails of foxes are often almost as big in diameter as their bodies. Fine and thick, the long fur is a muffler that keeps the sensitive nose and pads of the feet warm. The tail comes around close to the body, and the nose is buried in it before the animal goes to sleep. A frost-bitten nose would be a very great disadvantage to a hunter which depends as much as the fox does on this organ. And a tailless fox would hardly survive a cold winter.

The most valuable fur animal is the black fox. A perfect skin, of good size, and of uniform, glossy black, each hair tipped with white, may bring four to six hundred dollars. Two or more perfectly matched skins increase the price of each, for they supply enough fur for a set that sells for many times the price of the skins. The name "silver gray" is applied to this fox by the trapper and dealer, though the colour is not gray at all. The frosty light made by the white tips on the lustrous black pelt is beautiful beyond words. The black furs into which white hairs are artificially fastened are a poor imitation of the inimitable "silver fox," the only properly descriptive name.

· Growing foxes for their fur is a new and interesting experiment. After telling just how the pens and yards are built by those who have gone into the business, Mr. Seton concludes that anybody who can succeed with hens can do so with foxes. And he ought to make twenty times as much money, because a fox is worth twenty hens, in the market. No doubt as the prices of furs mount upward, the enterprise of fox-raising will pass the experimental stage, and become a more common industry.

The Swift, or Kit fox is no larger than a common cat, and its name refers to its fleetness. Its silvery gray colour, with a tinge of yellow, makes it very inconspicuous on the Great Plains, but it is so simple-minded that it eats poisoned bait and so it has little chance to hold its own in the neighbourhood of settlements, as its wily cousin, the red fox, does.

The Artic fox is white in the cold sub-polar regions the year around. In a belt of warmer latitude it changes its white coat for one of brownish-blue in summer. Farther south it is blue all the year. Its blue-brown coat brings the highest price. The breeding of blue foxes is started in the Aleutian Islands, which lie in the southernmost latitude these





The gray wolf is the ugly, iron-jawed wild cousin of the dog



No mother is more devoted to her growing family than the cunning red fox





The mink is equally at home in the water or on land. He is out by day or night, and is a famous and successful hunter



Shrewdness and a thirst for blood is written on the weasel's cruel face

foxes inhabit. They are much more easily managed than silver foxes.

The fox family depends on mice for the mainstay of its diet. Up north the lemmings are caught and their frozen bodies stored by the foxes against the day when snow is too deep for hunting their sleeping prey. Any fox will hide food it does not need, to dig it up again when the day's hunting is insufficient to satisfy the appetite.

When mother foxes play with their babies, they are training them to hunt and to avoid the many pitfalls and temptations that beset a young fox. Next, they must test the theories of life their teacher has set forth. Many do not learn the lessons, and these are the ones that fall. The shrewdest survive, and always the shrewdest of their cubs are the ones which perpetuate the race.

## THE SKULKING JACKAL

COMPANION of the hyena at its disgusting feasts is the jackal, the coward and scavenger among dogs, as the hyena is among cats. Each feeds upon the leavings of other beasts, and is not particular, eating carrion, and skulking off, if other animals come near.

Mr. Dugmore's jackal looks very much like a fox in the photograph. His spotted hyena is larger than a good-sized dog, and has very long front legs that give the line of the back a decided downward slant.

The jackals were probably the wild parents of the domestic dog of Egypt. European breeds no doubt sprang from various wild dogs, which men (scarcely less wild than they) tamed and taught to serve them in the hunting of their prey.

## THE MARTEN FAMILY

### THE MARTEN

**T**HE marten looks like a big mink with a long bushy tail, a blotch of yellow on the breast, and white linings in the long, erect ears. The feet have five toes, the middle one the longest; the claws are sharp, and the soles broad, well-padded and thickly furred. The fur is fine and close, chocolate brown, and very handsome. The valuable "Russian sable" is the fur of the marten of Siberia. "American sable" is the furrier's name for the fur of our species.

The marten is a creature of the North. It lives a hermit life in the sombre forests of firs and spruces. Hunters and trappers say they never see two full-grown martens together, except as they meet in a deadly fight. The first sign of the coming of settlers or lumbermen into their neighbourhood causes the martens to go away. They are utterly unsociable among themselves, and they wish no human neighbours.

Up in the hollow of a dead tree the abandoned nest of the big woodpecker, lined with grass, leaves, and moss, is the chosen home of the marten. In rocky regions it may be a burrow leading into a shaly bank or a crevice in a cliff. But the marten is as much at home in the trees as the squirrels are. In the nest a half-dozen little ones are born in the spring. For them the mother hunts by day and sometimes by night. The red squirrel is swift and nimble, but the marten follows, and gets him in the end. On the ground the hares are pursued with the same certain result. The marten may take time to rest, but it resumes the chase later by picking up the scent. It is probable that both squirrels and hares (rabbits, we call them) are so paralyzed by fear that they yield more easily than they need to. When they see a marten following they know their time has come. Gray and fox squirrels are not found in woods where martens live. When rabbits are scarce there are few martens. A strange scarcity of both occurs about every tenth year.

Partridges, and all other birds in fact, are the natural prey of martens, which take them when asleep and rifle their nests. Mice are always acceptable. For a change, the ber-

ries of the mountain ash, and beech nuts, are eaten.

Though the scent glands in the marten are very small, few animals will eat its flesh. Its enemies are the fisher, the lynx, the foxes, and probably the larger hawks and owls.

Trappers rarely see the marten except after he is caught. Occasionally a hunter, passing through the pine woods, sees a broad, brown face with pointed muzzle and white ears at the doorway of a woodpecker's nest. If he shoots, it disappears. If he passes on, the marten will crawl out and circle the trunk to keep the man in view. The hunter counts on this exhibition of curiosity which enables him to drop the creature to the ground with a shot.

## THE MINK

OCCASIONALLY you may meet on a path in the woods a slim-bodied, short-legged, rat-headed animal less than two feet long, with a coat of glossy brown fur that shades from white on the chin to black on the tail. "Sh!" says your companion, who knows the little furbearers of the neighbourhood. "It's a mink. Let's watch him."

If the little creature has seen you, it is very likely to disappear most mysteriously, as if it faded into the brown of the dead leaf carpet of the woods. Or it may take a noiseless plunge into the brook, or enter a burrow that some accommodating little rodent has dug big enough for his narrow shoulders.

Better luck it is for you to melt into the landscape yourself, by crouching, silent and motionless, against a tree or bank, while the unsuspecting mink comes on, attending to its own business, and paying no attention to you. It lopes along, gracefully arching its back with every bound, and pauses at the edge of the



stream. Now you may see a new mode of fishing. Here is a mother mink, getting dinner for her numerous family. Back in a warm nest at the end of a long, twisting tunnel the babies are waiting, and there may be as many as ten, though usually not more than six. The father has gone off on his travels, and the mother faces grave responsibilities. Just now it is a fish dinner she has promised, and she sniffs the air and scans the ripples for the gleam of a bright fin.

A dash, and she is chasing a trout under water. In a moment she reappears with the fish in her mouth, and as she lays it down makes sure of her prize by biting it through the neck. You may expect to see the same thing repeated until she has quite a number of fish. Then, one by one, they will be carried to the nursery, and each youngster gets his share.

This must be along in midsummer, for the baby minks are born in April or May and it is a month before they open their eyes and begin to eat solid food. Before this they are helpless; the mother nurses them, and all her hunting is for her own food. Now they are active and ravenously hungry, and soon they are allowed to go out and learn to fish and hunt

for themselves. Long before winter they leave their mother's nest, able to shift for themselves, although they are not full grown till a year later.

If you make a good imitation of the squeak of a mouse, a mink that is busy fishing may pause long enough to cock her ears and sniff, for minks consider mice very good eating. I fancy that young minks find their greatest pleasure in following the trails of meadow mice, under the matted, dead grass, in late summer, and despoiling the nests of wood mice in rotting logs and among tree roots.

Farmers let their boys trap minks, because the fur brings in pocket money, and because minks will sometimes visit a chicken house. If an old mink gets the notion, he may drag a hen off the roost every night for a week. The bite on the neck enables him to suck the blood, and he is likely to eat the brains, too. If he is hungry he makes a meal on the flesh. Sometimes he kills several chickens on one visit, and takes only the blood and brains. A mink weighs only about two pounds, and he cannot drag a heavy hen very far away. So he makes his meal and leaves the carcass, and the farmer knows who the villain is.

Minks are found from Labrador to Florida

and from the Atlantic to the Pacific, except for the desert regions of the Southwest. In spite of trappers, who market the skins by the thousands each year, and the steady decrease of many wild animals due to the settling and cultivation of wild land, minks are increasing in numbers. How can we account for it?

They are wonderfully resourceful. A mink is as much at home in water as on the land. He can eat almost anything, and live almost anywhere. He runs swiftly, dodges like lightning, if an enemy outruns him ejects a musk as pungent and disagreeable as that of a skunk, when trapped or cornered; and fights so fiercely that no animal of his own size is a match for him, and many larger ones hesitate, with good reason, to attack him. He likes swampy land, ponds, and streams, for here he can follow the muskrats, kill and eat them, and take possession of their elaborately built homes. Fish is his favourite food, but if fish are too scarce or too wary, he turns to frogs, tadpoles, crayfish, and even snakes, clams, and insects.

On high ground he is quite as happy as on low, provided there is fishing within a reasonable distance. Grouse and quail are at his mercy. He can climb a rough-barked tree if there are eggs or young birds up there;

squirrels and rabbits and the tribe of mice are always at hand.

If a house or a town is built close by, the minks need not move. Table scraps are very good food. Rats are better, and chickens best. If we could only realize it, minks are better ratters than cats or terriers. They fearlessly open war, and the rats which survive the onset escape in a panic. If they had had minks in Hamelin-town the pied piper would have had no work to do.

Daytime or night is all the same to the mink. He sleeps in short naps, wherever he happens to be, in the course of long journeys of exploration about the country. The trail back home is known to him by his keen scent. If he loses it, or scents an enemy, he sniffs loudly, and stands bolt upright to look about in all directions. If a fox runs him down, or a hawk or owl swoops on him from overhead, he generally escapes by an unexpected side jump, and a quick dodging into the first cover that offers. The fox is too large to follow, and it is useless to wait. The birds of prey haven't even the fox's chance to catch a mink.

When they are about old enough to open their eyes, minks are just right to be taken and trained. They make attractive pets, playful

as kittens, and accomplished rat-hunters. Some are ugly in disposition, and will bite. So they are too treacherous to trust to the care of children. Another fault, named by an experienced man, is this: "They may prove very mischievous, their scent leading them to food not intended for them. Their fondness for bathing will prompt them to enter a tea-kettle or any open vessel, and when wetted they will roll and dry themselves in a basket of clothes fresh from the laundry, or even upon a lady's dress!"

A fisherman, sitting in silence on the bank of a stream remote from towns and seldom visited, often sees minks at play, barking softly, gliding along the bank, diving, plunk! into the water, chasing each other in and out of the brook, the old and young ones of a family equally happy, and not at all disturbed by the presence of a man, as long as he makes few motions and doesn't speak.

## THE WEASEL

SOMETIMES we hear the name of this animal applied to a person who has been cruel, unprincipled or narrow-minded in business dealings. As well call a man a cut-throat or a thug. It is the worst one can say of him. The man who earns this opinion of his neighbours is despised and feared more than any other kind of human being.

What is this wicked creature like? There are several kinds of weasels in America. But they all live by killing. They are thirsty for warm blood. A long, slim body, slim, short legs, the most powerful jaws and the sharpest tearing and cutting teeth — these are the creature's means of accomplishing its purposes. Eyes, nose, and ears are extra keen. If you think you saw the red-brown villain glide into the old stone wall stand still and squeak like a mouse. A little pointed nose comes out, the nostrils sniffing noisily, and the beady eyes alert. On the dead pine needles the creature seems to fade from sight. You cannot see

when nor where it went. No wonder some people say it is possessed of an evil spirit.

No bird that nests on or near the ground has a chance to hatch her eggs or even to save her own life if a weasel comes into the neighbourhood. Its day is devoted to breaking up these nests, in a frenzy of destructive malice.

Underground, the moles, ground squirrels, and all the tribe of the field mice have their homes. The lithe body of the weasel crowds along the "silly walls" of these shallow runways, and finds the family in the nest. Not one escapes the murderer. Sometimes the weasel brings together the creatures it kills in some protected place, as if storing food for a hungry time. But while fresh victims can be had, it shows no interest in the stores it lays by.

His own enemies are dogs, foxes, hawks, and owls, but he can evade most of them. A side jump, quick as lightning, allows the dog or fox to pass, and gives the weasel time to glide into a hole or up a tree. If near the water, it plunges in and swims as if water were its native element. On a straight run, weasels make wonderful speed by loping along, each bound covering several feet.

One personal virtue we must credit the weasel



with: it is brave in defence of its young. It will fight any foe, no matter how big and able. It glares terribly, and many a man hesitates to attack a creature possessed with fury, and able to move with lightning swiftness. A serpent, reared to strike the victim it has brought under the spell of its evil, glittering eye, is like the weasel at bay.

The weasel's liking for rats and mice makes many a farmer forgive its liking for chickens. The losses of grain from the rodents is a very serious one when the crops are stored in wooden granaries and cribs. One weasel will kill dozens of full-grown chickens in a night; the joy of killing becomes a passion, absolutely uncontrollable. In the same way, the slaughter of rats may be carried on by the chance weasel visitor, simply pausing for the feat on one of its excursions far from home. It is questionable whether it pays, then, to trap and shoot weasels about a barnyard. They may be the best friends of the farmer, taking his rats and leaving his poultry.

The weasel of the Southern states does not change its coat. But in the cold regions this animal puts on a winter coat of white. It changes its name with its clothing. A white weasel is called "ermine." We know

the soft, white fur, with the black tail tip, that has long been used to border and line the robes of state worn by kings and high officials in many countries. The tinge of yellow on flanks and tail is due to the abundant, odorous secretion of the scent glands, which all weasels carry.

On the glaring white of continuous snow fields the ermine is invisible. You would think the black tail tip would point it out. That is what makes it completely invisible. It seems to centre all attention on itself. Cover the tail tip, and the outlines of the body show faintly. A hawk or owl drops silently down, but it is hypnotized by the contrast furnished by that moving black spot. Aiming at this, the bird of prey misses the body, which is able to disappear as if made of quicksilver.

Knowing that weasels live chiefly on mice, a gentleman who met a weasel in the road and saw it dodge into the stone wall alongside, began to squeak, imitating a mouse as well as he could. He was rewarded by seeing the weasel bob up, halt in the attitude of careful attention, then begin a careful examination of the crevices in the wall. At intervals the squeak was repeated, and since the wall yielded nothing, the weasel followed the direction from

whence the sound came, and this brought it out into the grass-grown roadside, beset with brush. Back and forth it went, following, without doubt, the runway of a mouse. But finding no fresh scent and perhaps mistrusting the squeaks as imitations, the little creature disappeared in the wall again.

A nest containing four young weasels was found by a man repairing his stone wall. The babies were so young that their eyes were not open; and their pink little bodies had no sign of hair except a tuft that stood up like a pompadour on top of the head! Mouse fur gave softness and warmth to the large nest, made of dead grass. The partially eaten bodies of meadow mice and birds showed the parents to be good providers. The babies looked comfortable and well fed, though too young yet to eat solid food.

## THE FISHER

THE boldest of the martens, the lord of the whole weasel family, is the "fisher," or "black cat," called the "pekan" by the Indians and the French Canadians. "Fisher" is a misleading name, for though it likes fish, and will steal one when it gets a chance, it does not fish, as the martens and others do, nor capture live fish in any other way. The mink and otter traps are baited with fish. These stale scraps are stolen from the traps by the cunning fisher. The trappers gave it this name.

Up among the branches, the hollow trunk of a dying tree makes a good home for the fisher. At the doorway, as it crouches, watching, it looks like a big black cat with an unusually bushy tail. On the ground you might mistake it for a dark brown fox. Away it glides at the first sound of a step; the lithe body can slip into a hole six inches in diameter, though it is three feet long. Its agility, strength, and endurance are amazing. On these qualities rest its daring and its success. It can outdo

the squirrel and the marten at their own athletic game.

The fisher has a great reputation as a hunter. It is not afraid to attack a deer, and does this successfully by leaping on its neck, and sinking its sharp eye-teeth into the jugular vein. It is cunning enough to steal a young bear, when its mother has gone blackberrying. To attack the porcupine is one of its favourite undertakings, in spite of the quills. Foxes and raccoons have been worsted by the fisher, and it preys on martens, hares, squirrels, and mice. In fact, all the beasts of the woods seem to be under its dominion. It makes marvellous springs upon them from the trees, or follows them, almost flying, from one tree top to another. Its fleetness and endurance exceed these powers in most animals.

Strange it is that this bloodthirsty creature occasionally turns vegetarian. It enjoys a meal of beechnuts, and will travel far to satisfy a yearning for a taste of catnip! It is hated by trappers because it follows the line of traps, stealing or mutilating the animals that are caught, springing the traps and eating the bait, often tearing traps down, as if it understood what it was about.

Long distances are covered by a fisher in a

single night, if hunting is poor. Its broad, furred paws spread out and serve as snowshoes, if the drifts are deep and new. It makes long bounds, light as a cat, always sniffing the air for the scent of a rabbit or a partridge.

Imagine what a dismal fate it is that overtakes one of these wildest of wild animals, when at last it loses in the game it plays with the trapper, and is taken from the trap alive and sold into slavery, to be caged and looked at, fed and cared for, all the rest of its life. No wonder it will escape, leaving a foot behind, rather than be taken. Look into the discontented face of the first fisher you meet, in a zoo or a travelling menagerie. Was ever a creature more homesick for its native wilds? Animal collections are most valuable, but oh! the cost of them to the poor creatures who, not having been born there, remember their days of freedom, and grieve for their return! Few languish in captivity as the fisher does.

## THE OTTER

**T**HE largest of the weasels is the skulking, utterly detestable wolverine. But there is a big one, so beautiful and graceful and lovable that he redeems the family reputation. This is the otter, now becoming very scarce on account of the high price set on his superb fur coat. His range covers the whole country, all but the dry Southwest.

You can see an otter in the Zoo, perhaps. The rich, glossy, brown fur changes to a paler, and often grayish colour on the belly. The graceful animal measures over four feet in length, counting one foot for the flat tail. The small head is set on a long neck, and the slender body on very short legs. The broad feet are strongly clawed, webbed, and furry on the soles. In actions and looks the creature reminds us of its relative, the fur seal. Never still a moment, the otter weaves back and forth in its cage, slides into the pool, and rolls about in the water with evident enjoyment. The keeper gives it fish for dinner. It is well cared for, and apparently happy.



But you should see this animal at home. Perhaps you are to have that pleasure some day. The place a mother otter chooses for her home is the bank of a clear, deep mountain stream, abounding in fish, and swift enough to keep open, in places, even in the coldest weather. Back in the bank she digs a hollow for her nest, above the water level, and lines it with soft grasses. Here the three or four babies are born in May, and are safe for the first month of their lives. Back and forth, through the long hall with an outside door under the water, the mother goes for her own food while the young are living on milk. Gradually she teaches them to eat fish, and finally they follow her out of the home nest, and learn to catch fish for themselves.

Otters are expert swimmers and fishermen. They have good eyes, and can see under water as well as a fish. They use their fin-like feet for oars and their flat tails for rudders; they can dive without a splash, chase out the hiding fish from behind rocks and under water plants and nose about for them in the mud. It is fair sport for an otter to fish for the mighty salmon, whose cleverness is not equal to his own. Whatever the otter wants, he gets, among the river-dwellers. He devours crayfish and clams when fish are scarce.

When the otter babies are first led out by their mother, they are afraid of the water. They object, but the mother takes them on her back and swims about, occasionally ducking under, then coming up, to show the youngsters how much at home she is in the water, and to encourage them to try it. Accidentally (?) she lets them roll off, and they have to exert themselves. She rescues them, and after a while it happens again. Just so your father teaches his boys to swim. And the youngsters of both families gradually gain confidence and skill.

When winter comes the young otters are quite independent, though not full-grown until nine months old. With the family cares dropping from her shoulders, the mother begins to enjoy her children in a new way. They have been companions in fishing; now they have leisure to play together. They do not have to work all night for their living. They make themselves a toboggan slide, choosing a steep incline of clay soil that leads to a deep pool below the bank. Clearing away sticks and tree roots, they make the clay as smooth as possible, by sliding down, and returning very wet from their plunge at the bottom. Time after time they return, like schoolboys sliding

down hill. But the otters have no sleds. They only have to turn their forepaws backward as they lie down at the top of the slide.

Perhaps it is more fun when winter provides a bank of snow for the toboggan slide. If we believe the stories we read, two or three families of otters assemble and have a merry time, sliding down the steep hill and out into the frozen river or lake, happiest when one of them breaks through and gets an icy bath at the end. They are unconscious of the coldest weather, for their thick fur is very close. Under it is the thick hide, and under this a thick layer of fat. What harm could a cold-water plunge do? It puts a glare of ice on the snow slide every time a romping otter waddles back and dries his coat by sliding down again.

Do they quarrel for their sliding turns? Woodsmen say not. They play tag together, and a favourite two-handed game, which is to pull at a stick to see which youngster's teeth have the strongest grip.

It is a pity that such gentle and beautiful creatures should not live undisturbed by men. But trappers set snares and traps at these otter playgrounds, or hide close by and shoot the animals as they play. Their fur is all the trapper can think about.

Little otters are easily tamed, and make delightful pets. No suggestion of their weasel kinship crops out. They are agile on their feet, though they have a rolling gait, and they do not mind staying tamely about the house. Perhaps this life of ease suits them, and they never know what fun they are missing.

## THE SKUNK

**N**O wild animal is more inoffensive when let alone, more offensive when disturbed, than this little, black, flat-bodied, bushy-tailed "wood-pussy," with the forked band of white on its broad back. The wide, strongly clawed feet prove it a digger, like its badger cousin. It waddles sedately along, its bushy tail held erect, its head near the ground, intent on its evening meal.

A procession of six or eight skunks, moving in single file along a shadowy path, in the moonlight, or in the twilight of a summer evening, means that the mother has brought her children forth.

And a pretty group of kittens they are, their black and white coats new and their handsome tails waving proudly like so many plumes. After weeks of confinement in the narrow, underground nest, with only milk for food, it must be a grateful change to the youngsters to troop out, and learn by actual practice how easy it is to find and catch fat crickets and grass-

hoppers. How good to eat these delicacies are!

So many birds nest on the ground, and are asleep when the skunk procession comes by. Nothing is better than a nestful of eggs or nestlings, or a family of young rabbits. The weasel instincts in these hunters stir at the taste of blood.

Perhaps a hen and her chickens have escaped from their coop, and are snuggled nice and warm in a hollow in the orchard grass. It is good sport for the skunks to put them in a panic, and capture all, even the old hen.

There is plenty for skunks to eat all summer long. The father returns, joins in the nightly hunting trips, the youngsters grow like weeds, and each member of the family gets so fat by the time autumn comes, that its gait becomes more wobbly than ever. It is hardly able to balance its fat body on its four uncertain legs.

As winter approaches, the skunk family goes below. The first burrow entered may belong to another skunk family, by right of possession. Do the newcomers oust them, or do the ones already there wake up and protest against being disturbed? Not at all. There is no store of food to divide with any-

body. The newcomers may have to dig a little to make room to sleep in comfort, or if they can curl up comfortably without this extra work they are all soon sound asleep. Throughout the cold weather they remain dormant. They are not as deep sleepers as the badger and woodchuck, however. A warm spell above ground rouses them and they come out to look around.

In early spring skunks are thin, and for naturally sluggish animals fairly active. Hunger makes them keen for food. They lay open the burrows of ground squirrels, shrews and mice, and when they visit the farmyards they are as interested in rats and mice as in chickens. The farmer will not usually believe this, but it is true. When insects begin to crawl out of hiding, and their eggs to hatch, skunks turn to them. They quite forget their weasel appetites and habits.

The secretion of ill-smelling musk in glands near the root of the tail is common to all weasels. The skunk surpasses all others in the perfection of this means of protection. A quantity of yellow liquid accumulates in the gland, and this is discharged with terrible certainty of aim at any enemy which takes the risk of approaching within six or eight feet.



The jet of liquid has not only a sickening odour but it blinds the eyes of dogs, and chokes them. They fling themselves into the water, if there is a stream or pond near by, and try to wash away the acrid, poisonous stuff.

After dreadful experience, many animals which would be glad to have the tender and delicate flesh of a skunk to eat, forego the pleasure, because they count the cost. The risk of being drenched with the disgusting fluid is too great.

So the skunk lives his peaceful life, practically unmolested. No more interesting companion could be imagined than a tame skunk. So people say who have skunks as pets, running about the premises, climbing in and out of pockets, fondled and praised by their owners, but regarded with dread by visitors. They are as neat as house cats, never having the least odour until the fatal day when something frightens one of them, and it defends itself.

Here is a word of caution and practical advice gleaned from Mr. Seton's chapter on skunks. The creature is slow to anger; it gives a chance of escape to all who meet it by chance and are paralyzed with fear and uncertainty as to what course to pursue. It stops, facing the stranger, and stamps with its



This skunk was caught at one of his worst tricks



Gentle and lovable, the otter makes a most interesting pet



The badger is the prairie dog's mortal foe, but he makes friends, occasionally, with the coyote

front feet on the ground. Now is the best time to turn quietly and walk away. This will please and satisfy the skunk, for he has no malice toward any one. If the stranger goes forward, instead of retreating, the skunk lifts and spreads his plume-like tail, all but the drooping white tip. This is warning number two, and still the skunk gives the stranger a chance to retreat. If the latter is still obdurate, or if he turns and flees precipitately, the tip of the tail rises, and *then!* A thin stream of pungent liquid flies forward from the gland's long duct. Some observing naturalists say it carries ten feet.

But no one need wait for this. A skunk must think a man a fool to invite punishment. He deserves the scorn of skunks and men, and the solitude that he must seek for some days.

Skunks are becoming more numerous, and the fur is more popular than ever. Not long ago the name alone would have prevented any self-respecting lady from wearing it. Now the furrier boldly advertises "genuine skunk," and buyers pay a better price than for many furs. The white stripes are dyed to match the dark part.

The value of a skunk is not entirely in its fur. A full-grown animal in good condition

will yield a pint of oil from fat that lies on the muscles. This oil brings a good price. It has medicinal uses, and is sold to wholesale druggists.

Down South the little spotted skunks, which have the same habits as their Northern cousins, are marked with narrow white stripes on back and sides.

## THE BADGER

**W**ISCONSIN is called the "Badger State," because the early settlers first saw this strange animal there. This is the eastern border of its range which broadens, north, south, and west, from the Great Lakes. A small, long-nosed bear that had been through a clothes-wringer would be about the shape of a badger. His flat, thick body and short legs and tail are clothed in silvery gray fur that changes to yellowish-white on the under parts and brownish-yellow on the tail. The face is marked heavily with streaks of black and white on a brown ground colour.

The badger's broad front feet are furnished with five long, curved claws, and their purpose is seen if the animal is surprised at a little distance from his burrow. Unless the ground is baked and hard, he can bury himself in it before you can say "Jack Robinson!" His claws, the burrowing tools, are operated very rapidly by the strong muscles in his short



front legs. He seems to flatten out on the ground and melt away.

A badger's burrow goes down five feet or more and comes up again, at a little distance. So if he gets into his hole and the person chasing him tries to drown him out, he must cast his eye carefully about or he will miss seeing the creature escape by gliding out of his back door. Sometimes, when surprised on the open prairie, he makes a burrow as he goes down. Now if water is poured in after him, he quickly backs up, so that his body fills the passage tight and the water doesn't get past. Run a stick down alongside, and the water follows. Then the badger has to turn and meet his adversaries. Stubborn and a good fighter, he will keep at bay a dog of twice his size. His teeth cut deep gashes, and dogs seem to know that there is no end of a badger's spirit and endurance in an open fight.

Brave as it can be, the badger is a shy inhabitant of the dry prairies. Its food is largely mice, ground squirrels and pocket-gophers — the creatures that live just underground. When settlers come in, the plough destroys the burrows of its groundling prey, and the badger moves on.



In the arid West, badgers live on prairie dogs. A pair will take up their abode on the outskirts of a village, and live there in peace and plenty until the desperate survivors depart, leaving the badgers in full possession. In late autumn the badger goes down for his long sleep. He has fat enough under his loose skin to keep him from hunger. Nothing more does he know until spring calls him out again.

Few badgers are left in the "Badger State," and, indeed, in the cultivated prairies of the Mississippi valley. They are inhabitants of the plains and mountains, where their burrows cost horses and cattle many a broken leg on the open ranges. Badger skins bring fair prices, so there are always men interested in catching them just before they enter winter quarters, for then the fur is at its best.

The funniest thing about this strange, flat creature is its occasional friendship with a coyote. Several reliable people have reported seeing a badger trudging along at the heels of a coyote, the two evidently good friends. Here a good story ends, just where it begins, for nobody knows why the two are chums, nor whether any mutual advantage is gained by this association. It is a strange sight, for the coyote and badger are not built to keep step together.

## THE WOLVERINE

**I**F YOU would see a professional trapper of the Canadian wilds beside himself with rage, you must meet him when, weary and footsore, he returns from a visit to his line of traps, and tells you that a wolverine has been there before him. You will notice that he has not brought in any skins from all the fifty traps or more he has out, in spite of the abundance of martens and foxes and other creatures known to be about. He is lucky if the sneak-thief has not visited his camp during his absence, and stolen all that he could carry off. It is one of the tricks that has earned for the animal the name, of "devil!"

The wolverine, largest of all the weasels, looks more like a bear and a skunk combined. "Skunk-bear" is one of his many nicknames. His fur is thick and long, dark-brown, with a pale, yellowish band that broadens over each flank and meets the other at the base of the bushy, skunk-like tail. The head, the high hips and the flat-footed, lumbering gait are

all bear-like characteristics. Though the creature walks on its toes, its weight makes it seem to walk on the soles of the feet. The most important skunk-like trait is the vile odour it emits when at bay, caught in a trap, or fighting with another animal. This secretion is also put upon any provisions that the beast has stolen from a hunter's stores, and upon any carcass stolen from another animal. No creature will touch — even if on the point of starving — any food that the wolverine has defiled, and thus marked for his own. No trapper will skin an animal caught in a trap, after the wolverine has visited it. Usually it is torn and thus made worthless, in addition to being soiled so that it is unfit to be touched.

The cunning of the creature is the most exasperating trait he has. He springs the traps and eats the bait, but rarely gets caught. He cuts the strings of trigger-guns, but doesn't get shot. He will carry off the heavy logs and tumble over the sticks by which the trapper sets his deadfalls, and carry off and bury steel traps, for pure malice.

No matter how deep in a snowbank a trapper may bury his bundles of skins, if there is a "carcajou" in the region he will dig them out and ruin them. His great strength is tested

in such a job. He can gnaw through green logs as fast as a beaver, though he has not a beaver's tools, the wonderful chisel teeth. He carries timbers that a man could scarcely drag. His claws enable him to climb trees, so that hanging a bundle of skins or provisions on a limb is no safeguard for it. However, an Indian trapper discovered that if he hung up his bundle of skins, and put one of the little bells, such as the dogs of his sledge teams wear, the tinkling sound kept the wolverines from going out on the limb. He had often tried the plan, and felt confident that it would always protect his property, so he told Mr. Seton.

The mischief-maker will sometimes enter a trapper's cabin, and carry out and hide every article of furniture, clothing, and food the place contains. Such things as bags of flour, sugar, meal, and rice, that he has no use for, he tears open and scatters on the ground. Bacon, hams and any other meats he may put by for his own use at a later time. The skilled woodsman can gather together most of his utensils by patiently following the wolverine's trails, and digging in the snow where the creature has carefully covered them. It is not surprising that this animal is the best

hated of all the denizens of the wilderness. Its meanness is unequalled by any other.

In all probability the wolverine lives mostly on small mammals that it routs out of their warm nests, and on sickly beasts of larger size and stores of other hunting creatures that it uncovers where they have been hidden. The deer it captures are probably faint from fasting and floundering in deep snow. Its huge stomach enables it to earn the title of "glutton" whenever food is plentiful.

But we must not count the creature a coward. Its one redeeming virtue is the fight that the mother makes when her young ones are threatened. Though a wolverine is no bigger than a good-sized bulldog, it is afraid of nothing when it faces danger of this kind.

## THE BEAR FAMILY

### BEAR TRAITS

**B**EARS are found from the frozen polar regions to the equatorial forests — great and small, black, gray, brown, yellow, and white, but never spotted nor barred. They walk on the soles of their feet, and have claws, strong and sharp, on their five toes. Their teeth are fitted for cutting, tearing, and chewing, so they eat all sorts of food, though they are ranked as carnivores (flesh-eaters). They walk clumsily, but run swiftly; some climb trees; all swim, and enjoy the water; except in warm climates, they hibernate in winter. They make homes in caves or hollow stumps, or let the snow roof them over. They travel long distances, making very distinct trails through the woods, and keeping to them year by year. Their range narrows wherever settlers come; they become shy and cowardly wherever they are hunted. But the settler has a long fight to protect his cattle and pigs in the farmyard and pasture.

In captivity bears are easily cared for, very good-natured, amusing in their ways, and interesting to old and young. The cubs, born in cages, rarely grow up. Often the mothers destroy them.

From elk to field mice, bears choose their prey, striking down the bison, or listening with ear to the earth for the scratching of tiny rodents in their runways. In Alaska the big brown bears fish the cold rivers for salmon, and consume quantities of marsh grass. Every region offers different fish and flesh.

Besides meat, a bear likes fruits and vegetables. He eats grass and digs wild turnips on the prairies; berries of every kind are his delight. He stands on his hind feet and picks choke cherries as fast as anybody could, cramming his mouth with the fruit, and occasionally eating the leaves and tender, but bitter, twigs. This fruit comes in September. Earlier it is the blackberries that tempt him. Honey is his greatest temptation, perhaps. No wonder he gets very fat in the fall of the year. He eats everything edible and never catches up with his appetite. The plenty of harvest passes, and snow covers the slopes with deep drifts. The bear seeks a solitary den, and goes to sleep.



Baby bears are born in midwinter after the mother goes into her den. There are two young ones, as a rule, and they are no bigger than new-born kittens, though their mother be as big as a cow. Their eyes are closed, so are their ears, and they are pink and bare as little mice. But the mother nurses her tiny offspring with so much tenderness that they gain in weight and size, and are quite independent when spring comes and she leads them out of the den.

The father bear is out, now and then, all winter. He doesn't fancy a life of absolute inaction. The mother bear has her babies to think of, and though she is awake much of the time, she stays strictly at home, nursing them, and having no food whatever herself, she lives on the fat laid up under her skin during the late summer and fall. She comes out thin and hungry after her long fast.

Few people know how fond bears are of the water. They love to fish, and are skilful at it. A hunter writes, in *Forest and Stream*:

"I came upon a very large bear lying on a hollow log across a brook. I found after he had left that there was a knot hole through the shell of the log and he had run his paw through the hole, holding it in the water until he felt a

fish, when he would close his paw on it. Thus he caught quite a string.

"The brook was alive with little trout and suckers. There was quite a pile of heads left on the log. I suppose the oil on his paws attracted the fish and baited them even better than a fly-hook. His toenails were his hooks, and sharp ones, too; once grabbed, the fish were sure to stay.

"Bears also catch frogs in these forest brooks, and drink the pure cold water in the hot summer days. They love to lie and cool themselves in the oozy pools, so they frequent the lowlands of the forest and follow the winding brooklets for pleasure as well as for food, and make deep paths, which every bear happening to go that way will follow. They often cross narrow places in lakes and rivers. They are good swimmers and appear to love to take a turn in the water. When fat they float, and their backs look like logs in the water. When lean, only the head is above water as they swim.

"If you row up to a bear which is swimming he will probably capsize your boat in an effort to get into it. Seeing a boat, the bear opens his mouth, gnashes his teeth, and makes a growling, grumbling noise. When a bear

gets caught in a trap he makes for water if there is a brook or lake that he can reach. If it is deep enough he will drown."

#### BEARS ARE DANGEROUS PLAYFELLOWS

Bears are playful creatures, and friendly to the passing people, who are tempted to offer them something to eat, in spite of the danger of being arrested if seen in the act by a policeman. I have seen a person, more rash than wise, stroke a bear's nose through the cage bars. Nothing happened. But some day that man may have his finger nipped off. It would mean nothing to a bear, but the man might regret his loss. Bears' teeth are strong, and quick to close on anything that is offered.

Pet bears are treacherous with teeth and claws. Just a yawn may spread the claws and bring them down with cruel force, tearing the flesh, and disfiguring a child for life. If you have a bear cub, do not trust it to the children. Sell it to some zoölogical collector before it is half-grown. This advice you will always get from those who know and like bears best. The manners of a bear are rough at best. His strength behind those terribly sharp claws makes his playful antics dangerous.

## THE GRIZZLY BEAR

WHAT is the most dreadful wild animal that lives in this country? I am sure that the grizzly bear will be the first one that comes to mind. Haven't we all heard and read of this giant which stands erect, welcomes the stranger with open arms, and whose hug is certain death? It is he who used to strike down the buffalo bull with a single blow of his paw, and later cost the cattle ranger many a good steer and pony, to satisfy his hunger. Certainly the grizzly bear is first among American beasts of prey.

If there is a grizzly in the Zoo, go and make his acquaintance. Where did he get that name? There is nothing "grewsome" about this comfortable, fat old fellow. He plods about from side to side of his cage, and looks with patient serenity at the people outside who seem to be so interested in him.

"Grizzly" means gray. The brown hair that makes this creature's thick coat looks as if it had been lightly sprinkled with white on the

upperparts. The long, dark hairs are tipped with white. This gives the bear his beautiful name, "silver-tip." The more white on the hairs, the paler the fur of course. Sometimes an individual looks almost like a polar bear, at a little distance. Others show but little white. The result is a very dark grizzly. The darkest hair is along the spine, on the ears, and on the legs.

The grizzly looks most ferocious when he raises the ruff of long hair on his humped shoulders, and his head swings threateningly from side to side. Those terrible claws seem to attract especial attention, though the paws rest on the ground, as if being fore-feet was their whole duty.

The size and form and use of the front paws are subjects on which we all have gained some ideas. The bear stands up; his huge body is clumsily balanced on the hind legs, and the front ones become arms. The muscles are strong. The huge paws, with five long, curved claws on each, are able to strike a terrific blow that stuns and then tears the flesh of the victim. The full force of one stroke will kill and tear open the body of an elk or a cow.

#### WHAT DOES A GRIZZLY BEAR EAT?

The old hunter, in the days when few men visited the wild Western country, would answer

you that the beast is a flesh-eater; that he strikes down an elk, a deer, or a bison. The settlers' cattle, horses, sheep were stolen by this bold trespasser on the farmyards. But he may not have watched this bear hunting gophers and ground squirrels, and the abundant field mice, and even smaller creatures, not warm-blooded.

We know that the monarch of the wilds tears dead logs open to find the fat grubs of beetles and other insects. He is patient and very skilful in picking up ants with the tips of his great claws which have torn open the hill. The bees sting him unmercifully, but he feasts upon the young insects, and upon the stores of honey and bee-bread laid up in the comb, which is uncovered by tearing open a "bee tree." He loves to take the roof off of the yellow jackets' buried combs, full of tidbits, to get which he will endure the stings of the outraged colony. A man would not willingly dare the fury of these cruel hornets.

The grizzly's flat hind feet have smaller claws, and they rest on the ground, as yours and mine do. They are plantigrade, the sole, from toe to heel, used for walking, not merely the toes, as with the cats. When the front paws are down, the heels or wrists do not rest

on the ground. These feet are not, then, quite plantigrade, but more cat-like. The bear has no power to retract its claws, as a cat has.

The bear's teeth are perfect for all kinds of food. The tearing eye-teeth are large, and the grinders have broad, knobbed crowns for crushing bones. There are cutting teeth above and below in front.

The tail is a mere ornament, I think. It is absurdly short, and usually is lost sight of in the long hair of the flanks. I have never seen a bear wag his tail, so I fancy he must be quite unconscious that he has one. The ears are short and round, and on them bears depend a great deal. The sensitive nose, too, locates danger by scenting it from afar.

The grizzly is very rare now, except in the mountainous wilds of British Columbia. He was too big and too brave, too destructive to the early settlers' property, to escape the rifle of the newcomer. The animals on which the grizzly naturally preyed were gradually driven out, and the bear seems to have realized that his only chance for life was to escape the gun. The brave were killed. The cowards only survived, and had young ones.

So it will be hard to find a fierce grizzly even



among the few that remain on the wildest slopes of the Rockies. The moment human neighbours appear, the bear moves on. He may suddenly see a woman or child come into his berry patch. He drops down on all fours, and takes to the covert as fast as he can go. He doesn't wish to be seen. His ancestral bravery is replaced by fear, that has also become hereditary.

If a grizzly is cornered, he will use his tremendous strength in self-defense. His powerful muscles are able for the conflict. But he knows that to run away is safest. He cannot reach the man behind the gun. His only chance is to increase the distance between himself and the hunter.

This bear is clumsy, but he can run as fast as a horse, and much better over broken ground overlaid with fallen timber. And his endurance in a race is astonishing. His breath never gives out.

The grizzly is not afraid of any other bear. With teeth and claws he scratches his autograph on the trunks of poplars and pine trees, as high up as he can reach, to let others know how tall he is, and to dare them to hunt in the territory he thus lays out for his own. If a rival appears who dares risk a meeting, they

fight. The defeated one departs, if he is able to travel.

The grizzly is able to hold his own against any other animal. Only the mountain lion dares fight him. It is very doubtful if this giant cat ever defeated this bear in open fight.

A mud wallow is a bear's delight. Here he soaks his thick fur coat, and for the coolness and refreshment he gets out of it, endures the swarms of gnats and mosquitoes. His sensibilities are not so keen as ours.

The twilight is his favourite time for going hunting, though any time of day or night finds him abroad. He has trails that are followed until they are well-worn paths. Here the bear-traps are set. Hunters are very careful to advise inexperienced sportsmen to keep out of the bear trails. There are good reasons. To meet a bear face to face, and to get a foot into a trap are both poor beginnings for a holiday. Not every tenderfoot remembers, in the critical moment, that to go up a tree will save him from an angry bear who believes he has to fight. The grizzly does not climb trees. This is worth knowing and remembering.

The biggest race of grizzlies is the Californian, now almost, if not quite, exterminated in the Sierra Nevada mountains.

The temper of a grizzly bear is naturally mild. The cubs play together, sprawling, punching, clinching like wrestlers, rolling about, and playing tricks on each other and their patient mother. The patience of the old bear is not always equal to the strain they put upon it. A bear cub gets many a spanking from his mother's broad palm. Indeed, sometimes she spanks her children because she has done something foolish herself, and sees her mistake too late to mend it.

An explorer in the Rockies suddenly came upon a bear with two cubs. He had no gun. His fright was equalled by the mother bear's.

Before he could decide how to save his life, the bear turned and fled down that rocky trail, spanking her two cubs at every jump, though each was going as fast as its legs could carry it. The man sat down and laughed till he almost cried. It was so unexpected and so funny to see those little bears look around reproachfully at their angry parent every time they felt the weight of her paw, helping them to hurry.

## THE BLACK BEAR

**T**HE black bear is not always black, but certain traits are always seen in it. Its facial profile is straight. Its curved claws are short on the front paws; its haunches are higher than the shoulders, and rounded, and the head swings low. A big specimen weighs three hundred pounds. A big grizzly may weigh three times as much.

The coat of a black bear ought to be glossy black, but, especially west of the Mississippi River, brown bears of this species appear, and a good many of them are a pale cinnamon colour. These "cinnamon bears" are not a distinct kind. A black bear often has one black cub and one pale one, and a cinnamon bear may have dark or pale brown cubs. The colour does not seem to be a dependable character.

It is very strange that the black bear is still found so widely distributed over the country, while the grizzly's range has so narrowed. The numbers of each have greatly diminished, as

the country has become settled. The black bear's advantage is that he keeps to the woods. The wild districts still give it food and shelter.

The grizzly loves open country, and since settlers came it can no longer live in such regions. It has only the mountain fastnesses left. It is so big that it is a shining mark for every hunter when it crosses open ground.

The black bear can climb a tree, and he can run like a fox. If he scents a man a mile away he is off, in the opposite direction, to escape his arch enemy. When run down by dogs, he stands his ground and fights with bravery, and often with success. But he shrinks at first from combat, apparently knowing that a man with a gun is something he can neither understand nor conquer. This shyness is the trait that has saved the race from being exterminated.

All the bear stories told in earlier days by the first settlers of the eastern half of this country were about the black bear. His fondness for sweets brought him to grief when he overturned the farmer's beehives. His preference for pork led him to endanger his life by stealing pigs, whose squeals roused the farmer with his gun. Yet inconspicuous creatures like gophers, meadow mice and insects, supplementing grapes, plums and berries, in the woods,

fatten the black bears for their winter fast. And they live on, in spite of conflicts with civilization.

The only hard time in the year is the late spring, when an empty stomach drives the bear out of forage where there are few signs of food. The soles of the feet are tender, and this makes hard going. But bugs and snakes are beginning to stir, there are tender roots and shoots, budded and full of sap. So even at first, the bear does not go back as hungry as he left his den. Soon the mice are scurrying along their shallow runways, and the bear listens for them and claws them out. No more famine for him when creatures of the shallow runways wake up and let him know their whereabouts.

The trick bear of the circus is likely to be a black bear, tamed and taught in its early years. It is not a good plan for ordinary people to attempt to tame a cub. He grows to be a nuisance as he becomes conscious of his strength, and the cunning little fellow may do some real damage.

Different species of the black bear inhabit remote regions of the country. We should expect the big bear of the Everglades to differ from the Labrador black bear, and their black

cousins in Alaska. But they all belong in the black bear group.

The black bear of Europe was a shaggy, savage creature, which got itself exterminated wherever man settled. The result is that its strongholds now are the wild mountain regions only. It is the bear of the old story books, and the often unhappy dancing bear of the wandering Italian in America.



## APRIL NEWS ABOUT BEARS

FROM a hunter's notebook, we learn much. "Bears have mostly left their dens now, and are tramping about promiscuously by the side of brooks and swampy places seeking for any green thing, and keeping one eye open for early frogs, and will, as soon as the snow is gone, overhaul the rotten logs for ants and worms. They are also sharp fishers, and will manage to secure a tempting string of brook trout long before we bipeds think of trying our luck.

"Should you meet a bear in the woods about this time of year, he would immediately rise on his haunches in great majesty and give an enormous snort; then he would whistle and champ his teeth in such a manner as to make it necessary for you to pull your hat down on your head. But don't run. When they see you are running from them, bears are apt to think you are calling them, and have something good for them to eat, and they will follow you and try to keep up. Stand your ground and

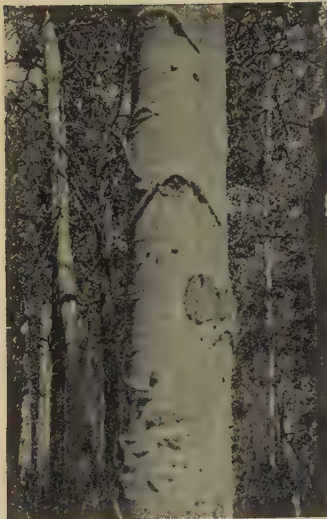
keep your eye on his eye — don't flinch, even if he should make a few lively jumps toward you on his hind legs. Stand and eye him—he is not coming clear to you — it is only to try your mettle, he is sizing you up, and will himself sneak off before long, unless you make a rush yourself in the opposite direction. The female bear with cubs is an exception, and caution and coolness are necessary in their presence.

“A gentleman on his way down the river one fall, met a large cub bear, he had no weapon about him; he stepped from the path into the woods, and directly the mother bear and another cub came rushing along. The man, who was from the city, and had never seen a loose bear, let out his voice the full bigness of his lungs, and at the same time spread out his umbrella, which he had with him, upon which the big mother bear stepped back a few paces and the cubs ran away. The old bear, however, gave a few extra jumps toward the man in a moment, and was on the point of embracing him when, just in the nick of time, one of the guides came running down the road, being attracted by the cry, and Mrs. Bear gave a loud growl and suddenly left to see to her family. The fortunate appearance of the guide at this juncture saved a life.

"Some say a bear cannot climb a tree small enough to reach his arms around, but this is a mistake, for I once caught a good-sized bear in a heavy trap, and he climbed a fir tree thirty or forty feet tall and strung the trap over the top of it, which slipped down several feet and brought up on the limbs, although the tree was not more than ten inches through at the butt. The tree had to be cut down to get the bear.

"I once caught a bear in a trap near the shore of a lake, and he climbed a tree that was separated in three parts and spread out, the crotch being some ten feet from the ground. On his trying to come down, the trap brought up in the crotch and let him down so that his feet just touched a log underneath. I found him in this position. When his hind feet touched the log he would give a jump and up he would go his length, and then down again. Thus he kept jumping and dancing, and every time he jumped he would scream loud enough to scare the owls out of the woods.

"I was camping at the head of Mellychunke-monk Lake with my wife and two children one night during my fall hunt, and in the night we heard a bear bellowing at a tremendous rate every fifteen minutes, during the latter part



Bears write their autographs with teeth and claws high up on the stems of young poplar trees



The black bear's fur is of even length and he stands higher at the hips than at the shoulders. His front claws are not long, like the grizzly's



The Polar bear in the Zoo must often pine for a nap on the shady side of an iceberg

of the night. I was sure the old fellow was in one of the traps I had set up north some five or six miles, as the sound was like a bear in a trap. At daylight I started off to tend my traps. After an hour or two I reached my first trap, and sure enough it was gone; such ploughing up of moss and tearing of trees was frightful to behold! I followed the signs as far as I could, feeling sure I had some large game worth looking after and that there was just enough danger in it to make it exciting, for, mind you, frequently another bear comes to see what the row is about, and if you have caught a cub bear, the old mother may be there: not a very desirable situation for one hunter alone.

“I followed on, and the diggings and tearings led me to a fallen pine tree lying up some feet from the ground, and being perhaps one hundred feet long. On to this tree the creature went, and on to it I went, my excited brain tuned to the highest pitch; I followed to the end, and could see no place where the animal had jumped off. I retraced my steps, keeping a sharp lookout on either side of the tree for a sign. When about midway of the tree I heard a scream near my head — such an unearthly scream, different from anything I



ever heard before in my life. It raised my hat, which fell to the ground. I jumped nearly or quite ten feet, turning partly around in the air, facing the music when I struck the ground, and looking up, behold! A large-sized bear hung in a tree by his hind feet, his head nearly reaching my head as I passed under him. I got such a thorough scare that it lasted me for two days.

“The tree grew near a log and the bear reached one of the lower limbs and swung himself into it. He had not been in the trap long, and was very savage.”

(All quoted from hunter's notebook)



## THE IMPRISONED BEAR

**A**BOUT the time that your grandfather was a little boy, Henry, aged eight, and Tom, four years older, lived with the rest of a big family in a wild, partly wooded, part of New York state, on a farm that was only partly cleared of trees and brush. Their parents were pioneers, and a lucky thing for them all it was that hunting, fishing and trapping were good in the region. A large part of their living depended on these outside industries, which were more exciting than grubbing up tree roots, and building stone walls. The crops and farm animals had to be protected from wild beasts. A bear occasionally ventured into the pasture and stole a calf or a sheep.

Tom and Henry were early trained to shoot straight with rifle and shotgun, and they knew the Indian's crafty skill in setting traps for beaver, mink and otter. But at the time this story tells about, big game was not so plenty as it used to be, and the two boys had earned the privilege of going some miles from home,

up the course of a river, to wilder country, where animals with the most valuable fur still were to be found. Only their mother felt anxious for fear that they might not have time enough to make the round of their traps, and get home before dark. But they reminded her that there was the cabin, and they could safely stay in it over night, if they had not time to get home before dark. Their father trusted them to do nothing reckless, and thought the winter's trapping programme would be a good training for them, and bring in a good many dollars, too.

One morning in early December the boys started out, armed with the old rifle, plenty of ammunition, a hatchet, a few extra traps and a full dinner pail. There had been a light snow the night before, and the tracks of various small people of the woods were plainly read by the trained eyes of the two brothers. But small game had but a passing interest for them. They hurried on, following the trails that served as roads, and at length came to the log house, now deserted, but once the home of an old woodsman, known as "the hermit." Tracks, big and little, were numerous here, and Tom remarked that there was firewood enough inside, in case they ever had to stop in the cabin

over night. There were matches, too, on the shelf above the fireplace.

Pushing on for some distance they came to the first of their string of traps. It was absorbing work to reset and bait each one, and artfully hide it from too plain view. Some visitors had taken the bait without being caught; others had met death in the attempt. Before they had reached their last trap the short afternoon was nearly gone. As they sat down to eat their late dinner, the first falling snowflakes warned them that another storm was coming, and they decided to start at once for home.

It was not so easy to hurry on the return trip. They had several squirrels and partridges in their bag, and besides the skins taken on their rounds they carried home two broken traps for repairs. They had had little rest, and less food. The lowering sky discouraged them. They had barely enough daylight left to see the cabin. When they got that far on the way they had no choice but to spend the night there, for whirling snow had obliterated their morning tracks, the wind was howling, and there was nothing to guide them, if they set out.

The younger boy was pretty much shaken by the strangeness of his surroundings, after

the hard day's work, and he did not at all like the idea of being away from home at night, much less in a cold, deserted cabin, and only a pile of straw in a rude bunk, with dingy, tattered covers, for a bed. He began to whimper at thought of the anxious home folks, who would spend the night in waiting for morning. But he saw Tom bravely facing the difficulty, by chopping up some kindling, and lighting a fire. Henry decided to be a man, instead of a baby; so he helped dress a partridge for their supper, and roasted it to a turn on a forked stick. They had no dishes, and no table, but the dinner pail furnished all they needed to supplement the delicious roast. Their spirits rose, as their hunger disappeared, and they cheerfully planned a start for home as soon as daylight came.

A noise outside the door startled the boys into sudden silence. That scratching on the log wall meant one thing to both boys. "It's a bear!" whispered Henry, his voice gone with fright. Tom sprang to the door and looked out. It was truly the outline of a bear he saw against the snow, and the light from the fire-place dazed the big fellow for a moment or he would probably have come right in. Slamming the door, and shouting to Henry to carry

the skins and ammunition up the rickety ladder, Tom seized the gun and followed, pulling the ladder up after him.

The bear, unused to company, and the sight of fire, entered very cautiously, first pushing the door open, and sniffing the air suspiciously. Seeing nothing of the boys, hearing nothing of them, and smelling the savory odour of roast partridge, he pawed over the dinner pail, and ate every scrap of food the boys had left. They lay on their faces above him, watching all his movements intently through the wide cracks in the rude floor of the attic. No sleep for them, yet they had lost their fear, and the sight of the big bear falling off to sleep, his nose lying flat between his forepaws on the floor, gave Tom an idea. "We'll play him a trick. He thinks this cabin belongs to him. We'll let him have it all to himself, until we come again."

Through the attic window the boys easily let themselves down, by the help of the roof of a low, lean-to shed. Slipping up to the door Tom pulled it shut, first pulling the latch-string through on the outside, and being sure that the heavy latch was secure inside.

Disturbed by the noise of the closing door, Bruin rose, and sniffing the boys, who returned

to their attic watch tower, discovered that the door was shut, and that he was a prisoner. Do what he would, he could not open the door.

At dawn the boys were on the way home and answering the shouts of the search party which came out to find them. Their clear, strong voices reassured the anxious home folks. But when they said they had a bear shut up in the cabin, everybody laughed, and their father said they needed something to eat. Both boys insisted that they were not hungry, and offered to prove their story. So back they went, and it was the dogs, which ran ahead and scented the prisoner, that made the doubting members of the party believe. The horses, too, showed great nervousness, refusing to go near the cabin. Nothing frightens a horse like the smell of a bear! Tying the excited team at a proper distance, the party walked up to the cabin, where Tom completed his triumph by slaying what proved to be the largest bear in the whole region, a crafty old villain, with many murders of valuable farm animals charged to his account by farmers, far and near. He had evaded traps and hunters for years, to fall at last a captive to two frightened, but courageous boys.

## THE BROWN BEARS OF ALASKA

THE finding of gold in Alaska led people to flock by thousands into that cold and almost unknown country. The gold-seekers were followed by others who went with more sober purposes, some to settle and help develop the country, some to trade, some to explore. Gold is not the only treasure that was waiting for men in Alaska. The mineral riches of that country are beyond computation, and only here and there have they been touched. The rivers are full of salmon and other fish. The snow fields and mountains are the homes of valuable fur-bearing animals. Among these is a race of big brown bears, beautiful, vigorous, noble creatures, like our grizzly bear in having high shoulders, but quite distinct from all other American bears, for all that. These animals have short, thick claws, very broad, massive heads, and their brown coats are rich in colour and very shaggy.

A half-dozen distinct kinds of Alaskan brown bears have been found already in that vast



country. Not all of us can see them at home, nor see the splendid skins brought home by hunters. But fortunately these animals are comfortable in the Zoo. There they live apparently happy lives, and people by thousands pass their cages, read the unfamiliar Indian names, and admire the handsome strangers.

The Kodiak bear has a superb golden-brown coat of long, thick fur, darkest just after the moult, in early summer. Even in April, when it is palest, the colour is a rich golden-yellow, not at all ugly, like the cinnamon bear's faded coat.

The chief distinction of the Kodiak bear is this: he is the biggest bear now living, and the largest of all flesh-eating animals. What would you think if you met a bear that had a shoulder height of fifty-one inches? A skin nine feet long and ten feet across the shoulders makes a very good-sized rug. Such are furnished only by Kodiak bears of mature years. For them the hunter must go to Kodiak Island, one of the Aleutian group, or eastward in the same latitude. And if he wants the darkest possible colour and the thickest pelt, he goes in September.

At the Zoo, notice the flat, broad forehead of the Kodiak bear, which makes a step down

to the level of the short, straight, square nose. Compare the short claws with the grizzly's long ones. Compare the Yakutat and other Alaskan bears with their big cousin, the Kodiak. Watch the behaviour of the different ones, to find out their tempers. Which ones are most playful? Which ones are in small, separate cages? Can you find out why? Are Alaskan bears able to climb trees? See if there are tree trunks for them in their cages. What provision is made for their comfort and amusement? How is the keeper armed who goes among them? What does he feed them? Watch them as they eat.

## THE POLAR BEAR

**I**T IS a great pleasure to meet a polar bear in the cage at the Zoo. The tall, flat-sided stranger is homesick, I know. His attitude expresses dejection as he weaves back and forth, swaying his head from side to side. He must be uncomfortable in our warm climate, though white is the coolest colour he could put on. The keeper says he is not unhappy, and that he enjoys his plunge in the pool quite as much as if it had a block of ice in it. Do you believe the man knows?

What are the lonesome polar bear's brothers about, up around the ice-bound borders of the Arctic seas? When it is June in New York the sun must be giving the Esquimaux their brief summer — the sun is visible day and night, near the horizon. The ground is free from snow in patches, and here are moss and grasses and berries of strange kinds. The ice melts back toward the polar regions, and open water lies between islands which are lost from sight most of the year under the ice fields.

The polar bears are out. They are happy to explore the bare spots of ground for roots, moss, and berries. Eagerly they crop the grass. The young ones, with their mother, are still babies, but she takes them with her. They nibble as she does, and like the green things. By the edge of the sea the young seals sun themselves on the rocks, and here young walruses come out of the water. The polar bear is skilled in the capture of both. They are the prey that furnish her with food for herself and her young. If she cannot get to them quickly enough, she takes to the water, swims out a little distance, then attacks them under water as they think they are plunging to safety. Salmon are her prey, also; she is a skilled and patient fisherman.

The sea throws a good deal of food on shore for the bears. A stranded whale lasts a long time, and its blubber is good provender. Dead herring and other fish sometimes drift ashore in quantities, as if especially for the polar bears. These events fill the brief summer days that last till the polar night comes on — the long months without the sun.

When snows begin to cover the ground in deep drifts, the fat bear lies down and lets it cover her over. Her warmth keeps an open

space around her, and a chimney above her steams with her breath. Here she is utterly indifferent to events outside, utterly content to stay where she is. The two tiny cubs are born, and she suckles them, and keeps them warm. By spring they are frisky and strong. Their mother scrambles out of her melting ice house and they scramble after her. Plenty of fish they find where the water laps the melting shore line. Birds are abundant. Hunting and fishing are rare sports for young polar bears. They learn quickly to float and to swim under water, and to lie still on a cake of ice when in danger of being seen by an enemy.

So strong and skilful an animal has things its own way in the frozen North. The Esquimaux hunter is the most successful enemy of the polar bear. He needs the white fur and the fat and flesh for food and warmth. So he takes these great beasts by his cunning — as many as he needs.

White men are astonished at the number and the tameness of polar bears inhabiting certain islands in the Northern seas. It is told to the shame of some hunters that they seize the opportunity to butcher all they can, as the weasel does in his world. The joy of kill-

ing is not sportsmanship. The true sportsman has no respect for the braggart who helps to exterminate any game by slaughter. The scarcity of polar bears is due to the activity of the few unprincipled hunters who have killed them by the dozens.

## THE RACCOON

**T**HIS little cousin of the bear has a most amusing habit. He dips his food in water before he eats it, if there is water at hand. The water need not be very clean. I have seen a caged coon dip a slice of bread into a basin of very dirty water, then eat it with apparent enjoyment. His Latin name, *Lotor*, means "the washer." The surname that precedes it is *Procyon*. See if you can find that name in the list of stars, and the reason why the raccoon has it also. The tale that unfolds is most interesting.

The coon is nearly three feet long, and stout, with slender, short legs, ending in strongly clawed feet. His muzzle and ears are sharp, and remind one of a fox. His face has a patch of black on each gray cheek. The hair that covers the body is grayish with a yellow tone, due to the banding of each long, coarse hair. The tail is ringed with black and white.

When corn is in the milk the coon slips out of his cave, or hollow tree, and makes tracks





This is the raccoon, nicknamed the coon, washing his food before he eats it.



"Say! Wouldn't dat 'possum mek yo' noul watah, jes' to  
look at 'im?"

for the cornfield. It is night, and the farmer is asleep. There, unmolested, the coon bears down the stalks or climbs them, and stripping the green husks, helps himself to the tender, milky grains. Soon they will harden, he knows. So he samples far more ears than he can eat and this is why the farmer does not love him. Many a bushel of corn is destroyed by the wastefulness of this little beast and he steals poultry night after night, unless caught at it.

In the fall the dogs and guns are taken out to hunt the coon, and thus take revenge. They will sell his skin to the furrier for a good price. But in many regions a raccoon eats only the wild crops, nuts, wild fruits, bugs, fish, snakes, birds and their eggs, hornets, and bees and their sweet stores. Fortunate indeed he is to have so indiscriminating an appetite, for when he comes out of his hollow tree in spring he is lean and hungry, and he eats everything he can find that is at all edible.

An old coon-hunter writes: "The raccoon has a cry something like that of the little owl, but louder, clearer and without the closing trill. I often hear both cries at the same time.

"In the fall of '86 I had a coon in my doorway, chained under the trees. Nightly he

answered the coons in the forest. When uttering the call, or cry, he sat on his haunches, threw up his head, so that one side of his mouth was upward, and blew the sound through the half-closed lips into the upper air. He was a ventriloquist. The cry seemed to come from the tree tops above him.

“The raccoon sometimes repeats a loud cluck. This cry can be heard on still nights half a mile away. The cubs are warned when in danger by a cry of one note. A young coon that I had caught in a steel trap was carefully tended by an old male. The wound on his leg was frequently licked, and the old coon was always uneasy when the young fellow seemed to be in pain, and would purr like a cat.”

## A COON HUNT IN TEXAS

(A letter to *Forest and Stream* tells this story)

**L**AST autumn I spent a few weeks in a little Texas town, enjoying the delightful climate and the open hospitality of my friends.

One afternoon, Tom, who was always suggesting something for my amusement, proposed a coon hunt; as it was a novelty to me, I at once signified eagerness to go; so without more ado we mounted our horses, and strapping a couple of heavy blankets behind each saddle, set out for the cabin of an old negro, who, Tom said, was a great coon-hunter.

After a brisk ride of a couple of hours, we arrived just after sunset at a little two-roomed house from which a troop of little darkeys came running out to the fence, grinning and blinking their big, black eyes to see who we were. My friends were recognized at once, and greeted with a chorus of welcome exclamations: "How-d'ye-do, Mass' Tom?" and "How is you, Mass' Phil?" sounded from all sides. These grinning little imps, with

glistening white teeth, took charge of our horses, and we went into the house where we found old Aunt Cindy Ann, who set about getting our supper, while we chatted and smoked before the big fireplace, in which a couple of hickory logs were blazing and crackling.

When we were called into the next room to supper, Cindy Ann herself was standing near the table ready to serve us. Our ride had given us a keen appetite, and we did ample justice to the dusky cook's fried chicken, hot biscuits, and coffee.

In the meantime, Uncle George, Aunt Cindy's "ole man," accompanied by two strapping negro boys, came in from the field. He, too, gave us a warm welcome, and was delighted when he learned the object of our visit.

Soon we were ready to start. The two negro boys carried sharp axes. Uncle George himself had a rusty old army musket, and the little negroes carried long torches of fat pine. A blast or two from Uncle George's horn set all his own dogs, of which there were several, and all the others for miles around, to barking and howling.

The woods were comparatively open at first, and with the aid of the torches we made

fair progress, Uncle George stopping occasionally to cry "Hi, there, Buck! Hunt 'em up, Trailer!" or some other words of encouragement to the dogs, but we tramped and tramped, without the least sign of success until I was weary and footsore. My legs ached, but I did my best to show no signs of fatigue. At last, when I seemed just ready to drop from exhaustion, Old Blue, one of the lead dogs, set up a bark which was instantly echoed by all the other hounds in the pack. This seemed to put new life into our whole party. We paused a moment to see what course the dogs would take, and then started after them. Away we went pell-mell through the brush and thickets, over briars and brambles, and into gullies and ditches, out of which we managed to scramble somehow, bent only on the headlong chase.

At length we came up with the dogs. They had treed the coon up a big red oak. Fires were soon kindled around in a circle about fifty yards from the root of the tree, and then one of the little negroes, who was as nimble as a squirrel, prepared to climb up and shake him out, but, after three or four unsuccessful attempts to reach the lower branches, he was forced to give up.



Next, the negro boys tried to call the coon down by rustling the dead leaves at the foot of the tree, at the same time making a peculiar guttural noise resembling the growl of the coon, but Master Cooney was not to be lured from his retreat. Then the axes were brought into play, and while Phil, Tom and I sat smoking our pipes, the negroes made the big chips fly, and soon the mighty oak came crashing to the ground. Away went the dogs, barking and yelping while the negroes yelled at the top of their voices; but in the noise and confusion, the coon made good his escape. His trail was soon found, however. The dogs were in full cry after him, and he was soon forced to take another tree.

This tree was not so large as the first one, and Uncle George, taking a large pine torch, began to walk around it. At length he shouted that he had "shined his eyes." We all ran to see, and after scanning the tree closely in the direction indicated, I finally perceived what seemed to be two small balls of fire gleaming among the branches. These were the coon's eyes, and Uncle George, handing me the gun, told me to "fetch him out."

Although I am somewhat distrustful of ancient firearms, I raised it and fired. Down

came the coon almost on top of us. It was only slightly wounded with small shot, but the dogs instantly covered it, and then began one of the fiercest rough and tumble fights I have ever witnessed; dogs, negroes, and coon all rolled on the ground together. The coon, throwing himself on his back, used his sharp teeth and claws with such fearful dexterity that more than one dog was sent back out of reach bleeding and howling; but the coon was at length despatched and placed in a sack carried for the purpose, and we started for Uncle George's cabin.

On the way, the fierce barking of the dogs announced fresh game. It proved to be a large opossum which was having a midnight feast on the luscious fruit of the persimmon. One of the little darkeys quickly climbed the tree, and by vigorously shaking the limb, succeeded in dislodging the 'possum, which came tumbling down, but there was no fight this time. On touching the ground the 'possum instantly feigned death, and all the shaking and worrying of the dogs failed to provoke the least resistance from him.

While I was examining the opossum, the little negroes cut a pole about four feet long, then split one end of it. The opossum's tail

was drawn through the split and curled around the pole which one of the negroes placed on his shoulder, leaving the 'possum dangling from the end, as a tramp carries his bundle.

We reached the cabin without further adventure, and there, wrapped in our blankets, slept soundly till morning, then, bidding the coloured folks adieu, returned to town, well pleased with our hunt, and bearing the coon's skin as a trophy.

## ✓ MARINE MAMMALS

### III. PINNIPEDIA. The order of fin-footed mammals.

Feet developed into paddles for swimming.

Marine flesh-eaters, that subsist upon fish and mollusks; come ashore only at breeding season.

#### *Families:*

1. Sea-lion (including the "fur seal").
2. Seal.
3. Walrus.

### VIII. CETE. The order of whales.

Carnivorous mammals of the sea, with hairless, fish-shaped bodies, and fish-like fins and tail, yet warm-blooded lung-breathers, that bear their young alive and suckle them.

#### *Families:*

1. Whalebone whale.
2. Sperm whale.
3. Dolphins and porpoises.

### IX. SIRENIA. The order of sea-cows.

Clumsy, fish-like animals, with front limbs expanded into fins; hind limbs wanting. They live upon coarse grass in river mouths and shallow bays.

#### *Families:*

1. Sea-cow, or manatee.
2. Dugong.



## THE MAMMALS OF THE SEA

**I**T IS not easy to become personally acquainted with the mammals whose homes are in the ocean depths, for they are large creatures, and it is impossible to exhibit them alive. Happily, the sea-lion is an exception, and occasionally a walrus, a sea-cow and a harbour seal may be seen in captivity, for a short time. But who has seen a whale alive? It is the animals that can live comfortably in fresh water that are found in zoölogical collections.

In a book like this one, it is best, I think, to bring together in one chapter the three orders of seafaring mammals, though such a sequence is not based upon natural relationships. All are finned, fish-shaped animals, and for this outward similarity, they will always be classed together in the minds of people.

The sea-lions, seals, and walruses form the first order; the whales, dolphins, and porpoises, the second; last, and least in importance, the sea-cows, an order nearly extinct.]

The California sea-lion's barking or coughing is heard at some distance from the rocky-walled pool provided for him. Over the rocks the huge creature climbs with the agility of a cat. He rolls about comfortably in the pool, stroking with his four fins, as much at home as a fish. Gliding out, he rears his huge form in the attitude of a lion, though his head is smaller, his neck slender, and he lacks the shaggy mane that makes a lion so noble-looking an animal.

The front fins are flat paddles, the hind ones are webbed feet, prolonged into flippers that are turned forward when the animals travel on land. The body is covered with coarse hair, brown in summer, grayish and paler in winter, utterly without value as fur. The head is small, with slender snout and erect ears.

The intelligence and gentleness of this species make its care a pleasure to the trainer. A group of sea-lions has been trained to give a performance together that would do credit to human acrobats. One of them balances a large wooden ball on the end of his nose. You will notice that a sea-lion in a tank is always playing with a ball, or other object, of which it seems never to tire.



The "seal rocks" outside of Golden Gate Park in San Francisco, and similar groups near the Santa Catalina Island and other stations up and down the West Coast, are places where one sees these interesting sea mammals at home, sunning themselves at leisure, slipping into the sea when hungry, to find a meal of squids and devil-fishes, which are destructive to the food fishes. Rarely will the sea-lions eat fish, when they choose their own food. They take to shellfish, most forms of which are not used as human food.

So sea-lions are friends of the fisherman. Because men are not sure, they assume that these animals live on fish. They have been slaughtered without just cause all up and down the coast. Now the killing has been checked through the efforts of men who know the truth.

The life story of sea-lions is best known through studies of the "fur seal," which is one of them, and not a true seal. The killing of these fur-bearing animals has made familiar the beautiful and costly fur that keeps them warm during the months they spend in the cold waters of the North Pacific.

In May the old bulls begin to land on the two Pribilof Islands in the Bering Sea, on which their "rookeries" have been established ever

since the first fur-hunter found them, some fifty years ago and put this fur on the market. The biggest seal chooses the best place and fights off all who challenge his rights to the location and to the harem of females of all ages with which he surrounds himself. A constant series of quarrels occur between rivals, who steal each other's mates, when possible. The females devote their time more profitably to the care of their young, which are born about the time of the landing. For the proper feeding of her offspring the mother is soon obliged to make excursions to sea. As the season advances she may be gone a week or more. She may encounter a fishing boat, and be shot or speared for her coat. In this case, the death of her young one from starvation is the tragic result of her own death. This is the wicked waste of "pelagic sealing," the killing of seals out at sea, a business now forbidden by joint treaties of several countries interested. The agreement was a long time coming, however, and the seal population of the two islands where all of this species breed dropped from over 3,000,000 in 1873 to 200,000 in 1903. Since then the number has been greatly reduced, for it is difficult to make countries, as well as men, see that it is wrong to kill any

creature on the high seas, which belong to no particular country.

The killing of young males on the islands is legal, under the prescribed rules, and it is from these that the choicest furs come. Removing the "bachelors" makes a more peaceable community, which is desirable.

Late in summer the young ones are taught to take sea excursions in search of solid food, and in November the islands are deserted. The seals have gone to sea. They drift southward and scatter, taking a general southeasterly course. In January they are opposite the shores of Southern California, and their direction changes. They move north in a course parallel with the coast, but far out, and swing to the northwest, as the Alaskan peninsula is skirted. This brings them home to the islands in spring, as is the custom of their race. Probably they will keep it up as long as a handful of the great herd is left. Perhaps their numbers will be allowed to increase. Let us hope so.

The true seals are stupid, clumsy creatures, with short necks, square, hairy front flippers, in which the toes end in claws. The hind flipper is useful only for swimming, as it cannot be turned forward. There is no external ear.

The fur is close, short, and stiff—of no commercial value. The skins, however, make excellent leather.

The ringed seals of the northern ice floes are at the mercy of the polar bears and the Esquimaux. The harbour seal that comes into bays and rivers along the New England coast, sometimes even to New Jersey, and far north, is a shore-loving, inoffensive creature, that is killed by fishermen and gunners, with little just cause, and by sharks and swordfish, which are as rabid as the polar bears in pursuit. The hooded seal, a large Atlantic species, wears an inflated bag of rubbery skin on the nose. The ribbon seal wears a wide circling band of white around the head and above the flippers, crossing under the body.

Walrus are very large, clumsy, finned creatures, with only the scantiest crop of hair on the thick, much crumpled skin, and two huge tusks, which are the overgrown eye-teeth of the upper jaw. By these tusks the walrus climbs on to the ice floes and up the rocky, ice-bound shores of northern seas. With them he combs the sea bottom, and digs up clams, sea anemones, starfish, and oysters. He eats sea weeds and grasses that grow in the shallows. The young are protected from the attacks of



The California sea-lion can turn his hind flippers forward and walk easily on land



The harbor seal loves company, is gentle and easily tamed. Its fur has no value, and there is no excuse for shooting it



Grotesque little winged mammals are the bats, mostly creatures of the dusk, and therefore mysterious to us



polar bears and Esquimaux. It is said that little ones, which are born ashore, and tended there for weeks by the old ones, are seized when danger threatens them, and carried, each in the mouth of the mother, who dives into the sea and swims under water to safety.

Larger than the Atlantic species is the giant Pacific walrus, whose ugliness increases with its size.

A little walrus in the New York Zoo is as big as a collie dog, and apparently well and happy in 1911. Feeding time attracts a crowd about its pool to see it eat the fish that are its fare. The keeper says it is an affectionate little beast, and nobody has proof to the contrary, though it is not very demonstrative. The young one brought by Mr. Peary in 1902 lived but a short time. Nobody has seen a full-grown specimen, except on the rocky shore or on an ice floe in the Northern seas, or swimming, or floating, bolt upright in the water, fast asleep!

The ivory of his tusks and his tough hide for leather both tempt the hunter to go after the walrus. The Esquimaux depend upon this animal for food, fuel, lights, dog harness, and many other necessities of life. Now the herds are so reduced that the Government has



to help support the starving communities thus cheated out of their living.

The tales of whale-fishing that old men still tell, sitting outside their doors in the coast towns of New England, are as thrilling as any ever written or told of life on shipboard. The business has changed and lost much of its picturesqueness since these men took their share in the dangerous work. Whales are not so abundant, either.

It is best to get some stories of whalers that put out from Provincetown or Gloucester in the early days when whales came near enough shore to be captured by crews that went out in small boats. These stories will tell the method of attack, the actions of the harpooned whale, the tactics of the men in the perilous and uncertain game they are playing, their ways of dividing the prize, the removal of the baleen and blubber, and the uses to which these commercial products were put.

The cachelot, or sperm whale, had no baleen, but it furnished sperm oil and the glove perfume known as ambergris, besides quantities of blubber, for this is the giant Atlantic whale, now almost unknown.

The dolphins and porpoises are little cousins of the whales. We see them sporting in com-

panies, following vessels at sea, and feeding on the schools of mackerel and herring. The back fin gives them another fish-like character not shared by the whales.

The unicorn of the Northern sea is the narwhal, which wears as a weapon, a twisted tusk that extends out from the head five or six feet. It is one of the pair of teeth (all the animal has!) which takes this central position, while the mate remains in the skull, undeveloped. The narwhal uses this tusk while he lives, and the Esquimaux make their weapons and tools of the ivory afterward.



## CHIROPTERA

The order of wing-handed mammals.

Animals with long fingers webbed to form wings.

Diet, insects or fruit. The bats.



## THE BATS

STRANGE, weird little mammals, fantastic in shapes, grotesque in features, winged by the webbing of the extraordinary fore-limbs. Such are the bats. Few people have ever seen a bat. Few know more than the fact that they fly by night, and are dreaded by women because they get tangled in their hair, and carry bedbugs into houses. The last two statements have very little foundation in the way of actual evidence. And bats are creatures of the dawn and twilight, not of the night.

Witchcraft has always had bats assigned to it, for their weirdness and the lack of knowledge as to their habits made them fit into the stories of people and creatures in league with the powers of evil. Superstitious people have always been suspicious of creatures and things they couldn't understand.

The manager of a summer hotel in the Catskills said to a scientific man, quite confiden-

tially: "The worst thing we have to contend with here is the bats. They are apt to get into the rooms, and when a woman sees one she begins to scream. They fly about the lights outside, and the ladies dare not sit on the verandas. One actually flew into the ball-room, and the guests fled in a panic. They say that bats like to settle on a lady's head and get all tangled up in her long hair. You can't free them without cutting off the hair, and so the sight of a bat always stampedes the ladies and some of them are sure to leave. This hurts the reputation of the house. Do you know any way to exterminate bats?"

The listener asked if ever a bat had got into any one's hair yet. No. Not that he ever heard of. He had been there five seasons. But it was daily expected, this awful calamity! It exists in the minds of ignorant and foolish people, too stupid to go to a library and read what is known about the habits of bats. A placard posted on the bulletin board would have done much to quiet the apprehensions of timid folk. It might even have been so interestingly written that bat study would become popular as an evening amusement for people tired of other topics. This suggestion



of the scientist was probably not followed, however.

It is because of the wonderfully specialized characters of bats that they are so generally distributed over the world, and civilization does not exterminate them, as it does many wild animals. The little brown bat is found all over this country, with the exception of the polar and tropical regions. Few animals are so widely distributed.

The monstrous development of the front limbs is the greatest marvel of the bat's structure. Hold one up to the light, and count the bones and joints. Review the physiology chapter that describes the human arm, and compare it with the arm of the creature before you. How long would your fingers be if lengthened as the bat's are, to furnish you a webbed wing like his? What would be the spread of your wings? How amazing would be your advantage, with such equipment, over Darius Green and all the experimenters that followed him, in the matter of flying! Take a look at the rubbery web. Stretch a piece taut, and examine it under a magnifying glass, if convenient. The bat complains, and makes faces at you, but his protests may be ignored for a few minutes, and his

patience rewarded by giving him his freedom.

The webbed wings of bats are a double fold of skin, liberally supplied with nerves of touch that end in very small papillæ on both surfaces. These nerve-ends give the flying creatures the power of avoiding collision with objects, even when sight and hearing are destroyed. They go in and out between wires without striking them, and escape injury where birds are often killed.

Enough is now known about bats to clear them of most of the evil that has been spoken against them. A few have been proved the enemies of men and of their domestic animals. True vampires suck blood; they puncture the shoulders of horses and cattle, or the noses of sleeping persons, and, by a strong suction, cause the blood to flow freely through a small wound, which heals without any swelling or pain. The Brazilian harlequin bats are the only blood-sucking tribe. Nobody dies of the injury.

Fruit-eating bats, also tropical kinds of considerable size, are called "flying-foxes," because their furry heads, with pointed ears and muzzles, are extremely foxy in expression as well as form. They fly by day, and do damage by devouring fruits on the trees. Some kinds

measure forty inches across the spread wings — creatures of quite terrible aspect to the visitor in the East Indies and Australia. They hang, head downward, in trees, hundreds together, squeaking, with shrill voices, and crowding each other, crawling awkwardly about, or making swift flights to choose better locations, and going off like a great cloud when disturbed.

Nature seems to have been in a prankish mood when she invented the queer leaf-like appendages that decorate the noses of a whole family of bats. But these useful little touch organs are not so amazing to see as the crumpled folds the West Indian leaf-nose wears in addition to the family peculiarity. Ears and chin form a set of frills, like the crowded petals of a double flower. The brightly coloured and velvety countenance reminds the observer of a double pansy. Fancy a flower twinkling a pair of wickedly bright little eyes, and showing its teeth in a fierce and fearful grimace, expressive of fright at being looked at!

The bonneted bat “looks like a rat in a poke bonnet,” so huge are its ears, and turned like two funnels directly forward over the sharp snout and the retreating chin. The hammer-headed bat has a head shaped like that of a moose. The muzzle is enlarged and much

folded at the tip, and I fancy that the donkey upon which Queen Titania spent her caresses in "Midsummer Night's Dream," looked like this bland creature. He is one of nature's jokes, and a big one, too, for his wings spread over two feet. He is one of the African fruit-eating species, quite unlike the small, modest species that live in America.

Coming back home from a look at the grotesque bats of the Amazon and the Far East, we have bat neighbours that are small in size and most harmless in habits — friends, indeed, working for our best interests, even when we consider them at best, disgusting creatures. Let us put away the notions of other days, and be open-minded.

The little brown bat we may find hanging, head downward, supported by a single weak claw, behind a window shade in a little-used room. It squeaks and makes up a funny grimace, showing its teeth, and probably ends in a hiss that warns us to let it alone. All this means only that day is its sleepy time, and it wishes to be alone. Take it from its perch and it will become sufficiently aroused to fly out of the window, unless it is restrained. Keep it long enough to see how it is made.

Notice how warm is the body of the little

fellow, under the short, thick brown fur, how especially hot the naked, rubbery membrane of the wings. How small and weak are the hind limbs; how large the fore limbs! No match for this in the animal kingdom. See how the tail is webbed in with the hind legs in a continuous sheet with the two wings. The tail extended makes of this web a parachute and a balancer in flight. The tail brought under the body forms a pouch in which the baby bats can ride. The little hooks that end the fingers and toes are the handiest things to catch and hold by. Notice the prominent thumb hooks. See what large ears it has, and the leaf-like lobe that stands up in the centre of each one. The eyes are like black beads, the nose blunt, the teeth sharp-pointed, to crack the shells of beetles and other insects that wear armour. The eye-teeth are prominent in all bats.

The early evening brings this brown bat forth, almost before the evening star appears, and we see it dodging and wheeling, as if it had not its bearings, and was disconcerted about something. But this is its method of hunting insects that fly. It keeps it up for an hour or two; then, satisfied, goes to sleep, hanging "wrong side up."

It is the way of bats to drink before they eat. All day they hang asleep. The fading light beckons them to come out, and out they go, not in a sociable company, but each for himself. First to the water for a long, refreshing drink. Then after their flying, fluttering prey with all their might. Birds of the twilight are after the same insects, and if there is an electric light to attract the "bugs," so much better hunting for whip-poor-wills, night hawks, and bats, and the best chance for us to see the sport, and identify the hunters engaged in it.

Two little bats are born in midsummer, and as there is no nest, the mother may carry them attached firmly to the two milk ducts, and clinging to her fur, on the flights at dusk and dawn. Rats and mice are enemies of little bats, which squall when they tumble off the perch. But when their eyes are open and they get a bit independent, they can be trusted to hang, silent and safe, on the twig their mother assigns them, and she will find them there on her return.

Mosquitoes are the pests that we are especially glad to be rid of. Twice a day the bat population turns out to destroy our enemies for us, but primarily for themselves. They

do not know what a friendly office they perform for mosquito-bitten creatures of higher rank than they. Humans can defend themselves, but think of the suffering cattle and horses that cannot escape the swarms, renewed after every rain, brought in on every breeze.

Never, never kill a bat, any more than you would your dearest friend! If you see a bat captured and in danger, because the person who has it does not know its ways of making a living, tell him about it, and use your utmost powers of persuasion to buy the bat's liberty.



## A BAT WHICH HAD A GRIEVANCE

SITTING secure in a crotch of the chestnut tree of my choice, beating the chestnuts from the half-open burs with a birch pole, and listening to their patter on the dry leaves far beneath, I was conscious, for a time, of a little gritting squeak, a squeak that sounded much like a small unoiled joint. It might have been two tree limbs rubbing together, only that it was too personal. Creaking limbs are always mournful in tone; this squeak was full of impotent, nervous rage. It was difficult to locate exactly, and I had thinned out the chestnuts pretty well, and was about to climb down before I discovered what it was that made the noise. Hanging head down from a twig that protruded from the under side of a large limb was a great bat, swinging from one hind toe. His furry gray body was loosely wrapped in his wings, that looked like wrinkled folds of dark sheet-rubber.

“His ugly little face was all screwed up with rage, and his sputtering squeaks were a ludicrous exposition of impotent fury. Every

blow of my pole on the tree had jarred him. In his darkness of our daytime he could not see what it was that troubled him, nor could he venture to fly away from it, lest he rush into worse danger. So he simply hung on and protested in all the voice and vocabulary that he had, and when I plucked him carefully by that hind claw, wrapped him in a handkerchief and stowed him in the pocket of my coat, he continued to mutter bat-profanity.

“The crimson of the sunset lighted the path home with a radiance that dulled the fire of the sumachs to the red of dying embers, and the purple wood grass caught and held these fires in its shadow until I reached my own door. Here I bethought me of the bat in my pocket, too long enshrouded for his comfort, perhaps. I unknotted the handkerchief, planning to slip him into an empty squirrel cage for a day’s observation before I set him free. But the sun was now below the horizon and the bat could see as well as I could. Seemingly he could see quicker. Before I could put fingers on him he slipped from the folds of the handkerchief, dove into the air, and with swift, sculling wings mounted above the tree tops, and was away like the wind.”—WINTHROP PACKARD, in *Forest and Stream*.



## GLIRES, OR RODENTIA

The order of gnawing mammals.

Chiefly small, land animals, with strong, chisel-like incisor teeth in front. Feet with clawed or nailed digits. Diet vegetable chiefly.

*Families:*

1. Squirrel.
2. Beaver.
3. Mouse and rat.
4. Pocket-gopher.
5. Porcupine.
6. Hare and rabbit.



## THE SQUIRREL FAMILY

### OUR AMERICAN SQUIRRELS

THE squirrel family has three branches: (1) the true squirrels; (2) the marmots; (3) the flying squirrels. True squirrels include, (*a*) tree squirrels, (*b*) rock squirrels, (*c*) ground squirrels. They live in three different zones; the tree tops, the rocks and under ground. The gray squirrel, the red ones, the fox squirrels all are in the group *a*. Chipmunks are the rock-dwellers, group *b*. Ground squirrels are prairie and desert species, which like the open country, and take refuge in burrows under ground. *Spermophile*, or "seed-lover," is the scientist's name for these burrowing species, which the farmer dislikes because they eat grain which he has sown.

The marmots are big, heavy-bodied, burrowing creatures, slower than the tree squirrels. The woodchuck and prairie "dog" are marmots.

The flying squirrels form a group of three

species with no other name than the one which describes the wonderful mode of progress they use.

The peculiar gnawing teeth, two above and two below, in the front of the jaws of squirrels rank them with many others in the order of the rodents, or gnawing animals.

The shooting of squirrels to eat is a habit that every American boy or man should be ashamed of if ever he was guilty of it. The flesh has a rank taste, and there is little of it. Doctor Hornaday says: "Americans are the only white men on earth that eat squirrels. An Englishman would as readily eat a rat!" I believe that no boy, when he knows these facts, will stoop to shoot squirrels for a pie. His English cousins are true sportsmen, and their example is better followed than that of some pot-hunting loafer, who shoots whatever comes his way.

The best reason for not shooting the tree squirrels is that they are quite as beautiful and cheerful as the song birds in the tree tops. We need them to enliven the groves in summer and winter. Their lives are just as interesting as those of the nesting birds. They are most interesting when they are harvesting their nuts and seeds for winter and getting ready for



their long sleep. Indeed, we must know squirrels better, and when we do, we will join with others of their defenders and make laws to prevent people from shooting them. The only "black sheep" in the family is the red squirrel.

## THE RED SQUIRREL

THE smallest of our Northern tree squirrels, a thin-legged, lively little chap, with reddish-brown back and white under parts is a familiar neighbour whose name is well known. "Chickaree" is a nickname which imitates his scolding, chattering conversation. This language flows unceasingly, as he goes about his small affairs. What changes he would make in the arrangement of things, if he had his own way! As he must make the best of things as they are, he utters his protests, in a succession of "churrs," introduced by a whining sound and interspersed by coughing fits. Plainly, he expostulates with you if you come near him; sometimes he sits on a limb and runs through all the changes in his limited vocabulary, sings all the songs he knows, and then, *de capo*, does them again.

Without a doubt, the red squirrels have highways through the tree tops; they know where the long leaps are from one tree to another, which ones are safe, and which dangerous. When the heavier-bodied marten is after a

squirrel, he will catch his victim, sure, unless by a miscalculation he fails to get across the gulf between two trees. The squirrel is so light it can run out to the ends of twigs before springing off. The marten, as big as a cat, must spring from a point farther back, before his weight bears the twig down.

It serves the red squirrel right to be the victim of the bloodthirsty marten, for there isn't a more bloodthirsty creature alive than this same little rascal. If you have a nest of red squirrels growing up in some deserted woodpecker's hole in a dead stump, you must expect that the mother knows where all the birds' nests are. Her earliest visits are the most merciful. She eats the eggs. But coming later, she takes the young birds. I have heard of undisturbed nests of robins and other birds in the same grove with red squirrels, but these are exceptions. You can't trust such company, any more than you can expect a cat to bring up a family of orphaned mice.

It is well for any animal to be able to change its habits of life. Red squirrels take to the ground when forests are removed. Gray and fox squirrels keep to the woods, and for this reason they are now no longer known in regions where once they were abundant. The confi-

dent red squirrel adapts himself to the new conditions. He even interferes with the gray squirrels in wooded parks. The Bronx Zoo is an illustration. The red squirrels became so arrogant that Doctor Hornaday had many of them shot. They are now fewer, and better behaved.

Red squirrels have no cheek pouches. They carry nuts in their mouths, and store their hoards in hollows under tree roots and in deserted nests of sapsuckers, close to their own winter quarters. They work by day, cutting off the green cones of pines and other evergreens, and later digging out and stowing away the rich, though small, nutlets, before they escape naturally from between the gaping cone scales and fly away. Perhaps it is a feeling that chestnuts might escape in the same way that sends the squirrels out on the twigs to cut off the unopened burs, and get bloody noses from the wicked spines, when a few days of waiting would drop the shelled nuts down. When you boys go to the trees in September, and look longingly up at the close, green balls, you will find the absurd little nut-gatherers swinging on the twigs, engaged in their hard and dangerous task, possessed by a feverish desire to accumulate winter provisions.

After all, it is rather absurd, for the red squirrel does not stay in and eat his hard-earned nuts in winter. He is at home only at the coldest times. The moment the thermometer rises a few degrees, out he comes, and scrambles about hunting for stray nuts and dried fruits left on the branches, just as if his life depended upon these chance pickups. Then back to his snug nest when night shuts down, or when a cold snap comes.

Mushrooms of certain fleshy kinds, especially *Russulas*, are eaten by red squirrels in season, and gathered by them, and tucked away in tree crotches to dry for winter use. Farmers' corn cribs and granaries are robbed and orchard trees are climbed for the left-over apples and their seeds, of which squirrels are fond. Vegetarians they seem by nature. I believe the bloodthirsty squirrels are mothers of large families, urged on by hunger, and the need of flesh to build flesh. If this is true, much can be forgiven.

The red squirrel's tail is rather a sparse wisp compared with that of the gray species. But it is a useful little tail, nevertheless, and it serves as a parachute when its owner makes one of its perilous flying leaps, breaking the force of a hard fall. A delicate organ, the

skin easily strips off of the pitifully bare chain of bones, if the tail is caught. The result of losing his plume is the dropping off of the bony skeleton. The crippled squirrel is never as able to escape his enemies as is one with a tail. So he early fails in life's struggle. It is absurd to say that a new tail replaces the damaged one. Reproduction of lost parts belongs to animals much lower than squirrels in the scale of life.

The red squirrel family consists of the two parents and five or six young ones. They are born deaf, blind and naked, as helpless little creatures as you can imagine. The nest may be in the crotch of a pine tree, or in a hollow stub, once inhabited by one of the woodpecker tribe. The mother makes the home snug and warm, lining the framework of sticks with shredded bark and moss and dead leaves. Here she suckles her helpless baby squirrels until they are able to eat solid food, and to follow her on short excursions through the tree tops. No doubt she teaches them the beaten paths, and the dangers that they will have to meet, the meaning of the sounds they hear, and the sights they see. She holds a frightened youngster by her mouth, her teeth closing on the skin of the belly, the legs and tail of the baby coiled

close around her neck. This is the way she carries them to safety. If the nest is discovered and looked into by human neighbours, the mother squirrel finds a safer place for her family, and abandons the original nest.

Careful as she is to feed and protect her young, the red squirrel mother has no idea of good housekeeping. The nest becomes filled up with filth and vermin, apparently without her noticing why the family is uncomfortable. The young ones which survive these unsanitary conditions are more than half-grown by their first birthday. It is believed that they live six years or more. There is a constant danger of capture by martens, weasels, owls, hawks, and cats. Other red squirrels are enemies, too, if their ground is trespassed upon. Each squirrel family has rather narrow limits to its range, and it may not go outside set bounds without trouble from its chickaree neighbours, who defend their food trees with spirit.



## THE GRAY SQUIRREL

THE gray squirrel, whose thick fur and bushy tail of reddish-gray give him his name, is the friendly, delightful companion which meets us at the entrance to the park, and follows us about, most politely inquiring if we chance to have a few peanuts in our pockets. Usually we have, and then we settle down on a bench, and enjoy the little fellow's antics, always new, though we have seen them a hundred times.

See him rise to a standing position, his hands folded on his breast — an irresistibly polite, inquiring attitude. Before we can fish in a side pocket his bright eyes catch the movement, he drops on all-fours and comes toward us in graceful leaping steps over the grass, the bushy, undulating tail waving like a plume, and expressing the satisfaction he feels. If you hesitate he may climb up to your shoulder or investigate one pocket after another. Regular visitors to the park, well known to the squirrels, are thus familiarly treated. It is a mutual benefit association. The nuts are there, but



This demure-looking young elephant may be watching the farmer re-planting his corn. The little striped rascal digs up the grain from the hills



Young red squirrels are out all day, playing games of tag, and travelling the treetop highways after their mother

the short hunt for them and the joy when they are found, supply an exciting little game that the two play together.

It is a pity that country children do not all realize that gray squirrels in the woods are easily tamed as soon as they understand that boys and girls wish to make friends with them. Scatter a few nuts about and they will come closer and closer to the house, to get this food. Set a post so that it projects two feet above the ground, and scatter nuts around this post, then watch the first squirrel which comes, as he perches on the post to eat it. It is a favourite perch, and a very great help when you are well enough acquainted to begin to photograph "Bunnie." This post is easy to focus upon and the alert little subject does not have room up there to shift his position and spoil a film for you.

When you are walking through the woods or about the home pasture no more delightful companion can be imagined than a tame gray squirrel. We ought to love the plump little fellows because they do no harm to any one, and their prettiness and graceful ways make them as desirable as birds in our tree tops.

The gray and fox squirrels in city parks will sit up and eat one or two of the nuts that visitors

offer them, then hide the others, here and there under the leaves. Later they find some of these "surprise packages," guided to them, possibly by a keen scent, possibly by a wonderful sixth sense of locality which we stupid mortals cannot comprehend. The truth is that many of these surprise nuts are never found by squirrels, but are left to grow. No doubt in the forests a great deal of nut-planting is done by squirrels. Nut trees are intermingled with trees whose seeds are carried by the wind. Heavy nuts can roll down hill, but they can't roll very far on uneven ground. Watch the doings of squirrels about the time of the nut harvest. Then go through the woods and notice how the nut trees are scattered. The squirrels think they are doing a selfish thing by hiding nuts. The truth is they are helping the helpless tree to scatter its children far and wide.

## AN INCIDENT OF HARVEST TIME

**I**N our open pasture stands a tall hickory, clad in the golden tone of autumn foliage, dripping gray nuts and blackened husks upon the pasture grass beneath it. Taking his pick among these was a splendid great gray squirrel, and as I approached, instead of bounding away across the open to the thick woods where he would have been safe, he sprang to the trunk, and hiding behind it eyed me over the lowest limb. There was something of roguish defiance in his look, and I accepted the challenge. I dropped my coat on the grass and swung into the tree, toward the squirrel, who promptly scampered up the trunk fifteen feet or so, poked his head over another limb, and undeniably winked at me.

“The gray squirrel is clever, but even on his own tree his reasoning did not go very far. I was steadily driving him to the top, where he would be cornered, but he did not run out on a limb, drop to a lower one, then scramble down the tree and away as he might easily have done.



He went straight on toward the top, and I after him.

“Hickory is tough, and even its small limbs will hold much weight. I could go as high as the squirrel could. On the topmost bough he poised. I was within arm’s reach. A gray squirrel has long, keen teeth, and knows well how to use them in self-defence, yet you may grasp one safely, if you will do it right. Take him with the full hand from behind, with the thumb and finger around his neck and meeting below his jaw. Thus you may hold him securely, uninjured, and be free from harm yourself. I have often pulled full-grown squirrels from the nest in this way.

“But before my hand reached him this squirrel had launched himself into the air, with a bound that carried him in his flight clear of all limbs. It was forty feet to the drought-hardened pasture turf, and immediately I keenly regretted my frolic. A fall from that height, I thought, could but end in the death, or injury, of my friend. I looked to see him go to his finish, but he did nothing of the kind. Instead, he spread his legs wide, stiffened his tail, and fairly seemed to flatten himself as he went down, scaling to the ground instead of falling inertly, and though he struck with a



considerable thud, he was up and scampering for the wood immediately. The squirrel had won, though I can but think it was a foolhardy trick, and that he would have done much better to slip down from tip to tip of the hickory limbs, and circumvent me by circumnavigating me." —WINTHROP PACKARD, in the *Boston Transcript*.

## THE FRIENDLY CHIPMUNK

THE first animal that greets me when I enter the Fordham gate at the Bronx Zoo is the chipmunk. He has no regard for fences, but ranges where he will. I catch a glimpse of his striped back, and beady black eye as he crouches under a rhododendron or laurel bush. I stop to speak to him, and he is in a panic. Up goes his tail and, like a streak of lightning, he disappears. A moment later he stands, like a statue, on the top of a boulder, watching my movements. At a word he ducks out of sight. I fancy his home is under the stone pile, for he lets me come fairly close before he flirts his thin, flat plume of a tail at me, as if waving a defiant, "Catch me if you can."

There are several of him, skittering about under the bushes that cover the driveway slopes. I have not seen them with their cheek pouches distended, for it is too early for their harvest. But I do see them daintily nibbling the seeds of wild plants, and crumbs from the feeding places of the deer and other grain-eaters.

But somebody asks how a chipmunk looks, how big he is, and where else he can be found in a wild, free state.

Chipmunks are the lively little rock squirrels with five black stripes on their backs. The ground colour of the fur is gray or brown above, becoming much paler on the sides and white underneath. They are less than ten inches long, the tail half the length of the body. The eastern half of the United States is the home of this active little sprite. Broken ground in open sunny situations, tumbled-down buildings, brush or stones piled up, offer them the best refuges from enemies, and easy means of building their shallow underground homes.

These are very ingeniously made by digging at first a crooked tunnel that goes several feet below the surface. Then it bends to the horizontal for a few feet, and rises a foot or more, where an enlarged chamber, lined with grass, is the home nest. From this centre, a direct passage leads up to the surface, but this back door is very far from the front door.

Nobody has seen a chipmunk carrying gravel or dirt in its cheek pouches. Yet in the building of a complex system of winding burrows and spacious chambers, much dirt is to be carried. If it builds under a brush heap or a

rock pile, there are plenty of places, out of sight, where the diggings can be deposited. Often the "dump" has to be in plain sight. But the chipmunk closes the door on this exposed end of its runway, after making another exit. There are always two ways of escape, as any boy will tell you who has tried to dig or drown out a chipmunk.

The chipmunks come out thin and weak from their long sleep, for they are not fat, like the bears and woodchucks, when they go into winter quarters. But there are the stores they put away so carefully last October, seeds of a great variety of plants, berries, acorns, and the nuts of beech, hickory, and hazel—all clean and sound, and plenty for the months between winter and spring. They are in storage chambers, excavated alongside of the home nest or hibernating chamber, where the chipmunk family spends the winter. Here we can imagine them enjoying in comfort the days when storms and all discomforts are abroad, coming out for a drink of water from the dripping edge of a snowdrift, and gladly returning to their warm, dry retreat.

One day a chipmunk pokes out his head, and feels the breath of the south wind. Then he knows that spring has come. He loses no time

in getting onto some high point of ground, a rock or stump suits his purpose, and there his little being overflows in a succession of chuck-chuck chuckles that are almost as sweet toned as the song of birds. He hasn't been singing long before all the neighbour chipmunks are out, each located on the best perch it can find, and all are singing together. There is pure happiness in these voices. We miss having this joyful salute to spring by living far from the open, rocky woods in which they live. The time to hear them is about the first week in April. Male and female both sing.

Ernest Thompson Seton gives a bit of news he obtained from Doctor Charles Eastman, the well-known Indian writer: "In the wooded parts of Minnesota the coming forth of the chipmunks is a recognized event among the young Indians, and is celebrated by a special hunt. As soon as the bright warm days of spring arrive to make it possible, the boys go forth between sunrise and nine o'clock to some well-known chipmunk haunt, where one of their number who is adept in imitating the creature's notes, begins the chorus by a loud chirping. The chipmunks pop out of their holes on all sides. Sometimes as many as fifty of them will come together and hold a

social reunion. Then, seeking some high perch, they join in the spring music with a concentrated energy that seems to make them heedless of danger, and soon they fall in numbers to the blunt-headed arrows of the little Indians."

I heard this cheerful little song from individual chipmunks much later. I fancy the stores of food hold out till the new crops are ready, and there is little to worry about. No wonder they sing.

Mr. Seton timed one singer who kept up his chirping, without a false note, or a pause, for six minutes, the best time being one hundred and seventy "chucks" to the minute. The slow, regular song beats two or three low musical "chucks" to the second. If any danger is suspected the notes instantly take a higher pitch, become shriller and quicker, and as the chipmunk bolts for safety, his song ends in a tremulous but defiant whistle, mingling fear with resentment.

The little chipmunks, four or five in a litter, are born in May. They are very small and blind and pink at first; their mother stays with them in the nursery, which is deep under ground, until they are a month old or more. Then they begin to be seen with her, outside the burrow, and by midsummer they are almost full grown. The mother is busy with a

second brood, and the big brothers and sisters look out for themselves.

Through the summer and autumn the chipmunks are busy and happy laying up stores of food in pocket-like granaries underground. The long winter sleep is coming. After that comes the very early spring, with snow and ice covering the ground, and no signs of plant growth anywhere.

On any autumn day we can see how the cheek pouches are used for carrying food to the storehouse. Suppose the day's work to be collecting acorns. The first one is tucked into one cheek, the next into the other. The third acorn goes in the first pouch and the fourth into the other. The hand-like front paws are used to pack the nuts into the cheek pouches, and it is hard work to get them rammed in tight. A pointed nut has its horn neatly gnawed off so that it will not be uncomfortable to carry. Finally the cheek pouches are crowded and the little nut-gatherer snatches up one acorn in its mouth and then is off for his storehouse to unload. It is quite often necessary to go in edgewise, or try several times to get in, for the burrow is made to accommodate the chipmunk's body, and the pouches are often astonishingly distended.



The granaries are little pockets near the chamber where the family lives. Nothing but sound grain, nuts, and seeds are stored in these places.

The worst damage the chipmunk does is to dig up corn as fast as the farmer can plant it. This is indeed a black mark for the hungry little creature, whose only excuse is that seeds of other kinds are scarce, and he cannot know that corn is worth more than seeds of buttercup or the fat little bulbs of the squirrel-corn.

Besides his regular diet of seeds and nuts, varied with berries and fruits, a foraging chipmunk likes an occasional taste of flesh. He will eat birds' eggs, and even young birds, and the dead bodies of animals, or birds, are attractive, though far from being fresh killed. Grasshoppers and fat grubs are relished. At times a chipmunk turns cannibal, and attacks a weak or wounded comrade.

The weasel can enter the narrow doorway of the chipmunk and gliding through the tube-like passages, two inches in diameter, make its way swiftly to the chamber where the family lives. The stores of nuts do not interest this bloodthirsty visitor. The chipmunks cannot defend themselves. The weasel bites through its victim's skull and sucks its blood.

Chipmunks by dozens are killed by a single weasel on the war-path. He kills for the pleasure of it, after his hunger is satisfied.

If the chipmunks have warning in time, they can keep the weasel out by plugging up with fresh earth the passages to the home den. But this is a temporary barricade. He is their hereditary foe, strong, relentless and cunning. Cats and foxes, hawks and snakes, all prey upon the chipmunks, but it is a fiercer fight that the weasels offer.

Chipmunks are up at dawn, and go to bed when darkness comes on. They thus escape the clutches of owls.

## THE LITTLE CHIPMUNK OF THE NORTHWEST

**W**E shall not see this little cousin of our Eastern chipmunk unless we go west and north from the Great Lakes. It is common in the woods of Canada, and I cannot help quoting, after Mr. Seton, this admirable picture of the looks and ways of this animal, written by Mr. Christy.

“Without exception, the chipmunk is, in its form and movements, the very prettiest little animal I ever set eyes on. In it the fear of man seems to be entirely absent, it seems to run away merely for fun, but for all that, you would almost as easily catch a flash of lightning! It is incessantly upon the move, climbing about and over everything, as if exploring, and always carrying its long tail bolt upright in such a ridiculous manner that it becomes by far the most conspicuous part of the whole animal. You may see one of these tails, with a chipmunk attached to it, dodging round a piece of wood and eying you keenly, without the

slightest appearance of fear, as if roguishly trying to tempt you to catch it. But try! In a moment, with a shrill, derisive, bird-like little whistle, the tail is gone — you hardly know where, till you see it again, a moment later, going through exactly the same antics along with several other tails.

“Among the sandhills, a few miles from Carberry, Manitoba, stands an old mill, which is usually deserted during the summer months. Around this mill the chipmunks swarm. Their holes run under its floor, and the creatures themselves are constantly to be seen scaling the walls and scampering over the roof.

“One day when I was at the mill, I found that they had entered by a broken window, had licked clean some unwashed plates left on a bench, and had even taken some samples of the eatables left in the cupboard. I went on another day to the mill in order to try to catch some chipmunks alive. This I found a very easy thing to do with a figure-four box trap. The animals seemed perfectly unsuspecting. Whilst I was setting one of these, a chipmunk extracted my small store of bait from the paper in which it was wrapped, and consumed a considerable portion of it. As the little thief scampered off at my approach, with every

appearance of laughing at me, he dropped the bread, and I secured it; but I had no sooner done this than, on looking around, I found that another chipmunk was sitting upright on the top of the trap I had just set, nibbling at my bait, which he held in his forepaws, and eying me sharply, but otherwise manifesting a coolness and deliberateness of procedure that completely staggered me."

No wonder that Enos Mills, who knows so well the little furry people of the Colorado mountains, has always loved "the merry chipmunk, one of the dearest of all small animals." I quote his own words.

## THE STRIPED GROUND SQUIRRELS

**F**ORTY years ago farms were newer and not so numerous nor so close together in Illinois and Iowa as now. The farmer looked with despair on the swarms of agile little rodents that came out of their winter quarters in the late spring and showed a keen interest in the corn crop that was just being planted. Indeed all the grain crops interested them. They gathered the seed before it had time to sprout, and put it away in granaries that had been excavated as branches of the underground burrows. Not only did the farm crops suffer at the time of planting, but when the time of harvest came. Whole heads of wheat and oats, as well as all the gleanings of the stubble fields, and between times, much grain taken from the shocks and stacks, counted up the heavy toll taken by the ground squirrels. There were so many of them, it was useless to try to rid the land of them. They were a nuisance that had to be allowed for and endured.

Many a boy of that early day has vivid recol-

lections of the sport of snaring ground squirrels. The loop of twine was carefully laid over the mouth of the burrow, a hole in the ground about two inches across. Sometimes it opened on the level surface; sometimes a tuft of grass, or some dried weedstalk was placed where it would screen the opening. But the boy brushed aside all such rubbish, trained his line along the ground, and lay flat at the end of it, ten or twelve feet away, with eyes on the noose, ready to jerk it the moment the head of the creature came up. It required quick work to get him, but boys became quite expert. The curiosity to find out what the boy was up to made the squirrel bob up and down repeatedly, and gave the boy a chance to reset his snare after missing, and encouraged him to try again.

If one sees a striped "gopher" (as it is incorrectly called) sitting erect at the door of its burrow, he may dash at the creature, and it will promptly bob out of sight. If he saunters by, missing the animal by about ten feet, and especially keeping his eyes off of it, the squirrel seems to think it has not been seen, and it does not budge from its statue-like, motionless position. If now, the person turns slowly, Mr. Gopher decides, very likely, to take a little stroll. He leads the pursuer a slow chase,



zigzagging in a crooked course, without paying any attention to holes, and apparently considering it a kind of game. A quick motion on the part of the person soon decides him to take to the ground, and a twitter of squirrel laughter comes up from the shallow dungeon into which he knows his enemy cannot follow.

Two kinds of burrows are made by the striped ground squirrels. One runs scarcely deeper than the grass roots, branches, runs a crooked course, and has a half a dozen or more doors to the upper world. Such a retreat is good to dive into to escape immediate danger. If the enemy can follow, there are plenty of avenues of escape. This may be used for games of hide-and-seek, too.

The second kind of burrow is for the serious business of life. It lies at least six inches deep, and is made of winding passages just big enough for the rightful inhabitants to travel with comfort. There is the home nest, where the young are born and reared, a room less than a foot in diameter, but large enough, and made soft with a lining of dry grass. It has more than one entrance, and connects with several avenues leading to the surface. Some people say that there is a straight, deep well dug by these animals. Such wells have been traced, but

nobody has proved that they are dug by squirrels. It is the general belief among naturalists that they get all the moisture they need in the grass and other succulent food they eat. If they do not need water, why should they dig wells?

Deep ploughing tears up the burrows of the ground squirrels. They go from the fields to the wild hay lands that are not ploughed. When these come under cultivation, the rodents have to move on. So they take refuge in any untilled patches. Their numbers have become much reduced. Hawks and cats and badgers are enemies of the ground squirrel; but the enemy that routed him utterly is the ploughshare of the farmer.

The striped ground squirrel of the Middle West is "the thirteen-lined spermophile" in books. Six bands of pale yellow streak its brown back lengthwise, and the brown lines between are adorned with rows of yellow dots. This slim, strikingly marked rodent is found, in several varieties, over the middle third of the United States.

The gray ground squirrel, called "Franklin's spermophile," has a smaller range that centres in Iowa. This little fellow likes the covert of hedges or fence rows. It looks like a small form of the gray squirrel of Eastern woods, though a closer look shows the gray fur barred with fine cross lines of darker colour.

## THE WOODCHUCK AT HOME

**Y**OU will rarely find him away from home — this stupidly contented marmot, who looks out upon the world through little pin-head eyes, set wide apart, in a countenance quite void of intelligent expression. His mind is like his body, heavy and clumsy. His wit is as short as his legs. He may not deserve at all the reputation he has for being surly. He has one trait of narrow-minded people: he is not easily turned aside from a purpose that he sets out to accomplish. When he starts to dig a burrow in a new place it is about as well to let him proceed. Choke the hole up with sand or wedge it tight full of rocks, and you will find them removed the next morning and the hole deeper than on the day before. Again and again the patient beast will clear out your silly obstructions. And when you see him he will not show the least resentment, but regard you as a harmless, rather interesting feature of the landscape. His lack of distrust probably has its explanation in your

record for good behaviour. Woodchucks are not much in the way, and they eat such plants as clover and grasses, which the gardener and the farmer can spare without any trouble at all. If they attacked his cabbages or gnawed the young trees in the orchard, as the vegetarian cotton-tails do, a war of extermination would be waged on them. We tolerate the woodchuck, but we secretly despise him as a thick-witted dunce.

When the days of summer begin to shorten, the appetite of the "ground-hog" improves. Some memory of the coming of winter may stir within him. He feeds more constantly, and by the time the snow flies, he is in fine condition for the long sleep that begins in November. A thick interlining of fat, under his coarse gray-brown fur, resists the cold, and the burrow in which he lies is below the frost line, in a belt that has a temperate climate the year round. Snow clogs his burrow and earth under the snow. Peace wraps the woodchuck before he falls asleep.

He is thinner when his long nap is done. A feeling of hunger makes him shake off the drowsiness, and burrow his way out. Is it always on February second, Candlemas Day? Tradition says that the woodchuck looks out

first on this particular morning, and a great deal depends upon the weather. If the sun shines, he will see his shadow, and if he catches sight of that he will go back to his nest and sleep for six weeks longer. This means forty-two days more of winter, a sad thing for most of us to look forward to. We have had quite enough. But if the day is dull, the woodchuck has no shadow, and he stays out, knowing that spring is right over the edge of the hills, and her breath will soon melt the snowdrifts and bring the early flowers.

"Ground-hog Day" is an old superstition that nobody believes in. But there are few people who do not think about it on its anniversaries, and jokingly ask their neighbours if they think the spring is going to be late or early, according to the old saying.

It is not sportsmanlike to shoot or trap woodchucks, for they are so inoffensive and so slow when outside their burrows that no skill is needed to get them. They walk into a trap, never seeming to suspect it. Their only hope when followed by a dog or a boy is to get into their burrows. Then they will turn and fight to the death if still pursued, but they never surrender. If the burrow is a new one and shallow, the dog that follows meets the wood-

chuck at bay. He is angry, gnashing his teeth, and uttering a throbbing sound and a peculiar grating whistle that means danger. The dog that knows from sad experience the stubborn grip those gritting teeth can hold, once they are able to seize his nose, will not venture close. Now the boy pits his cunning against the woodchuck's and thrusts a forked stick or a gnarled root into the hole. This the woodchuck grasps, and before it can let go it has been dragged out where the dog quickly kills it.

Long before the snow is gone the woodchucks are abroad in spring. They can be tracked for miles; naturalists think they are hunting for new home sites. They like dry ridges best, and banks on the edges of woods, for a woodchuck will not be happy unless he can sit by his door in the sun, the picture of lazy comfort. When the location is decided upon, the digging is the important undertaking. The den not only shelters the pair of adults that build it, but the brood of young ones, born in a special room or nest, about the end of April.

There may be eight in the litter. The usual number is four or five. They are very small and helpless, and are not able to see before they are a month old. But the mother brings them out into the sun by the end of June, and by



September they are able to take care of themselves. They grow rapidly, eating clover and other succulent plants near the home den, into which they scamper when a groan or grunt from the watchful mother warns them to get under cover. The father may help take care of the half-grown youngsters, but it is certain that during their helpless infancy he deserts the family, and the mother has the burden to carry all alone.

The woodchuck's claws are wonderfully strong and useful tools. The burrowing into the hard subsoil, often of stiff, heavy clay, requires hard work with proper implements, if good progress is to be made. Young ones dig burrows by the dozens near the home nest. They are never used. Is this work done to train the children? Woodchucks damage pastures, and cause many a broken leg for horses which stumble into these hidden pitfalls. But the serious work of the home nest comes after the winter ends and with the moving to new places. Even old woodchucks move and begin life over again in new quarters each spring.

The funnel-shaped entrance soon narrows to a passage with a diameter of six inches. Sometimes the descent is steep, almost vertical; sometimes a gentle slope. The tunnel runs



horizontally when below the frost line, turns, winds, branches into side tunnels, and each den has more than one doorway to the upper world. When digging toward the surface of the ground, the woodchuck carries the dirt off by some other route. When the digging begins at the surface, a pile of fine dirt is deposited close by.

The sudden disappearance of a woodchuck which has been chased into its hole is often mystifying to the boys and dogs that attempt to dig it out. The creature could not have got away without the sentinel seeing him. The fact is that he has backed into a side tunnel, and barricaded the entrance by building a close-packed wall of dirt in front of him that defies detection.

A very delightful grandpa of three brown-eyed, curly-headed boys, who had never seen a woodchuck, I know, used to repeat, very rapidly, the following rhymes, to the joy of the youngsters, who by this time probably say them just as fast themselves. See if you can do the same thing, without a mistake.

How much wood would a woodchuck chuck,  
If a woodchuck could chuck wood?  
A woodchuck would chuck  
All the wood he could chuck —  
If a woodchuck could chuck wood.

## MY PET WOODCHUCK

**I** ONCE obtained possession of a little woodchuck that had been brought home uninjured by a dog. If I remember rightly, the original price of the animal was thirteen cents, with a much-damaged fish line and hook thrown in. He was much too young to eat solid food, so we fed him on milk with a bottle and rubber nipple. When being fed he always sat up perfectly straight, grasping the rubber firmly between his little black hands, which always looked as if clothed in close-fitting black gloves, so sharply was the line drawn between the black of his paws and the brown fur on his wrists and shoulders. When nearly satisfied he would grip it so tightly that none of the milk could escape and, taking it from his mouth, turn away his head for a few seconds of breathing space and then fall to again. He grew rapidly on this diet, and soon developed a liking for green things generally, especially caraway blossoms. As these grew far out of his reach, often three or four feet from the ground, he

found it necessary, in order to get at them, to sit up beside the stem and, grasping it in his paws, bend it over toward him, pulling it down hand over hand until he had reached the umbel-shaped clusters of bloom, every particle of which he ate, allowing the stalk to spring back into place when he had finished. Strangely enough, he never troubled the vegetables in the garden in any way, although allowed to wander about the place at his own discretion. He managed to get along fairly well with the cats, though there was not much affection on either side. Whenever he saw one of them drinking milk from a saucer, he liked to come up softly from behind and nip its heels, and then scuttle off to some place of concealment in time to escape punishment. He often persisted in this amusement until the cats retired in disgust, whereupon he would proceed to help himself to the milk they had left. If he felt sleepy, he would sit upright, letting his head hang down until his nose almost reached his hind feet, and then drop over on one side, rolled up into a perfect ball. Late in the season, he began to make extensive tunnels about the doorsteps and underneath the paths, the caving in of which was the cause of several mishaps to various members of the family. Although perfectly familiar,

he was never affectionate, and toward the close of the summer he left us for his native heath; and the rest of his history is hidden in obscurity, though it is safe to assume that he lived to grow up, and eventually developed all the selfish and bear-like traits characteristic of his family.

## THE PRAIRIE DOG

**M**ILES and miles of desert country stretch between Texas and Montana, too dry for farming, but yet supporting populous villages. They are the prairie dog villages. Soldiers on tiresome marches, travellers in wagon-caravans or on trains, all come back to tell about the remarkable communities built by the remarkable little creatures, the cheerful inhabitants of the arid regions, the voice of the desert.

They are called "dogs," but they are really marmots. Their nearest relative we know is the woodchuck. They *bark*. That is quite enough to fix the wrong name upon them. Everybody who looks at them knows that "dogs" they are not. They are nowhere near the dogs in relationship.

A short-haired, plump little body, not unlike a young puppy's at first glance, but with squirrel-like head and hands, and a flattened tail. This is our little brown desert woodchuck. He is lively, alert, curious, and infinitely cheerful, apparently satisfied with his

rather dismal surroundings. Above all, he likes the society of his own kind, and this is why the villages grow to cities, sometimes bigger far than London or New York.

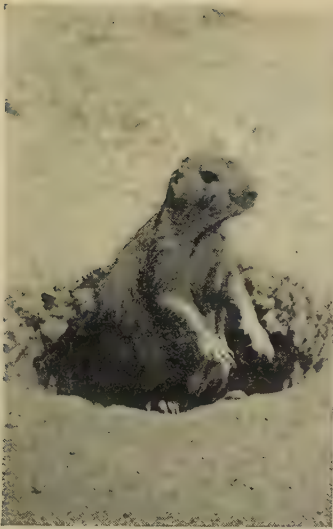
I quote the following from Major Mearus, who studied the mammals of the Southwest.

“In wild regions the ‘prairie dog,’ as this squirrel is universally called, is devoid of shyness in the presence of man. As one rides up to one of their so-called ‘villages’ he is greeted on all sides by the sharp ‘bark’ of the ‘dogs,’ scores of whom may be seen seated erect on the large mounds which they have thrown up around the entrances to their burrows. I have seen two troops of cavalry dismount and open fire on them for several minutes without frightening them into their burrows. The energy of their barking and accompanying bobbing motion of their bodies are amusing; but, to the weary traveller in the arid wastes usually occupied by these barking squirrels, their incessant cries soon become wearisome if not positively annoying, from the fancied challenge conveyed by their harsh tones and insolent bearing. They sit straight up on their hind extremities and bark as loudly as they possibly can until one rides toward them, when they drop down within the basin or de-

pression at the opening of their burrows, showing only their head and shoulders. There are often several burrows in each mound, and it is a common sight to see the 'dogs' leap from one side of the mound to an entrance on the opposite side, in which they disappear. They frequently keep on barking as one approaches, but gradually recede within their burrows until only the top of the flat head or the end of the nose is left exposed to view, finally disappearing entirely. When frightened into their holes, some time usually elapses ere they regain sufficient confidence to reappear; then a nose is cautiously raised to view, its owner attunes its voice to the familiar strain, and is speedily joined in a chorus by the whole community.

"They are not disturbed by the building of a railroad across their domains; on the contrary, the passing trains enliven their desert home and beguile their leisure hours. Some sit up and watch the locomotive thundering by without becoming in the slightest degree disconcerted thereby, evidently regarding it as a creation for their especial entertainment; others, to whom the noise and smoke are as 'an oft-told tale,' are sprawling flat across the summit of their mounds, phlegmatically enjoying the accustomed sun bath, while some jump play-





The saucy, curious, barking "prairie dog" is the little cousin of the woodchuck



The plump gray squirrel of the park is a delightful friend and neighbour



The woodchuck loves to sun himself at the door of his burrow



The beaver's work proves him the most intelligent and industrious  
of all the gnawing animals

fully up into the air as the train rushes past them.

"The source whence the prairie dog derives the water necessary for its subsistence is a fruitful topic of discussion among frontiersmen. Some assert that it requires no water for drinking, others maintaining that it digs deep wells, some of which are recognizable by the unusually large mounds about their entrances and the wet tracks of the animals returned from drinking.

"Although it prefers the highest plains, it is by no means unknown to the mountains of Arizona, where I have seen colonies living in the pine forests, and have found the animals eight thousand feet above sea level. Some were living in cliffy hillsides, burrowing under rocks, over which they climbed with easy confidence, often choosing the top of some large one for a rostrum from which to salute one's approach with their noisy 'barking.' Near Flagstaff a colony occupied a hillside adjoining a wheat field, which later they totally destroyed, notwithstanding the efforts of the owner to save his crop.

"This barking squirrel is a grain-eater, devouring nearly every green thing within its settlements, which in consequence become

barren and forbidding in appearance. Lack of food or sudden inundations are the ordinary causes leading to a change of location, which is usually accomplished by a gradual invasion of contiguous territory.

"An interesting chapter might be written under the caption of 'The Prairie Dog as a Pet,' to which every army youngster could contribute something of interest from personal experience. In captivity it is playful, and makes an extraordinarily bright and agreeable pet. It is fond of raw meat, and drinks water freely. Its propensity for undermining the walls of the buildings and digging up the yards is regarded as reprehensible by some; but, to juvenile minds, such trifling peccadilloes are more than compensated for by its clever tricks and its attachment for its master, at whose clothing it will tug when ready for a frolic or desirous of being fed."

It is true that the burrowing owl and the deadly rattlesnake are found living in the houses of prairie dogs. But they do not live together in peace, as we have been told many times over. The owl would rather drive the 'dog' out of his house than build one for itself. The snake and the owl both like tender little prairie dogs to eat. The neighbourhood furnishes

such supplies in abundance, so the bird and the reptile move in, and are seen going in and out, about their business, the prairie dogs apparently taking no notice of them. The superficial observer spreads the tale of a three-cornered friendship, but careful study has proved it false, beyond a question.

The white-necked ravens, which haunt the villages in Arizona, are said to live on the young prairie dogs, and the badger is one of its mortal foes. So is the coyote.

## THE FLYING SQUIRRELS

**F**LYING squirrels are the fortunate little aviators provided with webs of skin that stretch from front to hind-legs on each side of the body. When one takes a leap from the top of a tree, it is with the full knowledge that this two-winged parachute will check his flight, and ease the shock when he alights. He skims or sails down, and some of these leaps cover astonishing distances. Notice this, though: the flying squirrel does not fly upward. That would be real flying, a feat that is just beyond his powers. So his name is not correct, any more than that of the flying fish, whose wing-like fins spread out, and enable it to sail downward at a long and graceful sweep after jumping out of the water, just as many other fish do. They have no power to skim, so they return to the water with a flop.

A family of flying squirrels lived in an abandoned flicker's nest in a hollow tree. The mother had taken out a lot more of the crumbling rotten wood to give them all the room



they needed, and there the five slept curled up in little round balls through the hours of daylight. They had been born in late April, and they were quite old enough to take care of themselves when winter came. Their mother and father both had had a hand in their upbringing. It was the family habit to wake and scurry out of the nest as soon as the sun dropped out of sight. Then as the twilight came and the outlines of objects grew fainter in the shadowy tree tops, little living shadowy forms appeared and disappeared, silent as moonbeams. But darkness brought them more confidence, and any creature with the eyes of a cat or an owl could plainly see that the flying squirrels were out in a frolic with neighbours from other trees. In fact they simply swarmed. People said the red squirrels owned that piece of woods. They were fairly abundant there, and the chatter they made gave the impression that their numbers were far greater than they actually were. But the flying squirrels so far outnumbered them that it was a big joke. While the gossiping, scolding red squirrels slept in their nests, the swarms of their gentle, playful little cousins were laughing together, playing tag, and wondering who, after all, really did own the woods.



Tag is a pretty exciting game when boys and girls play it. How much more it would be if, instead of running all the time, they could leap and climb and swing off of the topmost limb of the tallest tree, and sail away to the tree top across the street, or to the top of the house! This is the flying squirrel's game. They do not fly as birds do. They go up the tree with the speed and agility of the liveliest squirrel. The leader leaps off when the twig sways under his slight weight, and spreads his feet as wide apart as possible. This extends the fold of skin between the fore and hind leg on each side of the body, and it becomes a sail or parachute. The thick, flat tail acts as a rudder. The body sails downward at an angle of about thirty degrees to the vertical, but gathering momentum, the angle widens, and at the end of the long leap the course bends upward, the squirrel catches the nearest limb, swings to the more solid footing of the larger boughs, and furls his sails.

So they spend the playtime of the long night. But there are more serious interests to serve. A hide-and-seek game of life and death when owls are hunting food for their young, and weasels, foxes, and martens are plotting against their lives. The thin little squeak of joy in

the game may turn into one of terror when the shadow overhead is that of a great barred owl, with talcns ready to seize the little aeronaut at the end of a daring flight.

No food is laid up for winter stores, so the question of staving off hunger is always a vital one. Beechnuts are to be had in some years, at times when snow does not bury them too deep. All nuts are good food for flying squirrels. But they eat seeds of many trees, berries that dry on bushes, buds and tender bark, and various hibernating insects. Campers know the liking of these animals for all sorts of table scraps and even for candles! They will eat almost anything. They constantly get into traps set for larger fur-bearers, to the great disgust of the trappers.

No mother will show more tenderness and self-sacrifice than a flying squirrel when danger threatens her precious brood. One by one she carries them out of harm's way, and gives all the strength and cunning she has to save them.

## A NIGHT WITH THE NIGHT-FLYERS

A FAMILY of lively children went to the woods with their father for a load of firewood, and the fun of a long sled-ride over snowy roads, and a picnic dinner around a gypsy fire at noon. There were fox-and-geese and other games to keep their feet warm while the father and older brother cut down the trees, trimmed them of branches, and loaded the sled. The dinner was a great success, and after the fire was put out, a few more trees were cut down to add to those already loaded. One of these trees was a ragged old thing, crippled by lightning, and hollowed by disease. When it fell, the top broke open and a very sleepy family of flying squirrels rolled out on the snow bank, utterly dazed by the fall, and the glitter of the snow. It was the biggest brother who seized the empty dinner pail and put the five little balls of fur into it and clapped on the lid. Later, to give them air, he tied his woollen scarf over the top, and they brought their treasures home, plan-

ning all the way how they could make them comfortable through the winter and establish them in the home grove, all of small and sound trees, for the coming spring.

There was great excitement when the menagerie was exhibited at the house. The little creatures were sleepy and did not object to the careful handling they got. The scarf was replaced while the chores were being done, and the pail was set for safe-keeping in a corner of the spare bedroom.

That evening unexpected company came, and the visitors spent the night. At a late hour the good-nights were said, and two ladies went to sleep in the guest room. About midnight, a scream, and then another and another, roused the whole family, and the children were sure that at last the Indians had come to kill them all. Mother was not a coward, and she was downstairs in a jiffy to find out the meaning of the tumult. It was the flying squirrels, which had easily gained their freedom by gnawing a hole in the knitted scarf that covered them. The lights out, they came forth to explore their new surroundings.

"It was nothing that I could describe that wakened me," said the lady whose scream had roused the household. "I was dimly conscious

of something velvety and warm, touching my cheek, like a butterfly's wing. I thought it was a beautiful dream. But I put my hand up over my head, and there on the pillow was a warm little body that disappeared without a sound. On the counterpane I touched another, and then I screamed. The room was full of them, I knew, and I didn't know what they were."

Then the light was brought in, and the story of the squirrels was told, while the five little squirrels were being caught and caged for the rest of the night. And the fact that they were put into the guest room and totally forgotten was explained and readily forgiven. But the irregular darned place in the big brother's scarf always reminded the family of the night the "Indians" came, when nobody was massacred.

## OTHER AMERICAN RODENTS

### THE BEAVER

TO "work like a beaver" is to do one's very best. Very few people ever saw a beaver setting the example which every boy and girl has been urged to follow, whenever interest in the work in hand lagged. This means that the wonderful big squirrel-like creature (mouse-like, too) has a great reputation. He is famous, and his deeds are known in every part of the country, even by people who never saw him nor any of his achievements.

I have visited the beaver which lives at the New York Zoölogical Park, but I never found him *out*. He was always *in*, and thus invisible to callers. He retires when daylight comes, and sleeps while people pass and repass his house, waiting and hoping to get a glimpse of him. The gates have closed on the last loiterer before the Zoo beaver wakes, and takes up his duties. He works under cover of the friendly dark.

How does he look — this remarkable engineer, which builds dams to make ponds where there are none; which digs canals to bring his loads of wood home, and never seems to get tired or discouraged?

A chunky, hump-backed animal, with squirrel-like head, short legs, and a broad, flat, scaly tail. The feet are peculiar. The front ones are hands, used for grasping, and for digging, and for trowel work with mud plaster. They are strong, and the five fingers bear long, hooked claws. The hind feet are much larger than the other pair. The five toes are long, set with hooked claws, and united by a web that extends to the nails. The claw of the second toe is double, and Seton thinks it may be used as a comb for the capture of insects in the close under fur. The whole foot is the swimming tool, and a most effective organ in use. The tail is bare of fur, and covered with overlapping scales. It is not used as a trowel, though this is set down in many books, and has long been believed by all except those who have studied the beaver at home. Naturalists of this class say that beavers brace themselves on the tail when they are at their work of cutting down trees, and when they wish to get a good view of the surrounding country. It is almost as



good a support as the kangaroo's tail, which is used in the same way.

The chief use of the beaver's tail is seen when he is disturbed at his work by the approach of a hunter. The creature is probably one of a pair. The duty assigned to him (or her) is to watch while the mate works. On the approach of an enemy, the watcher signals to the other by slapping the surface of the water with one stroke of his big tail, and plunk! he goes with a dive out of sight. The others follow the example. Slap! plunk! and the water closes over each. If the shot of a hunter mortally wounds a beaver, he dives without first slapping.

In the water, the tail is the rudder, and a very useful tool it is. The hind feet are the paddles, and the forefeet grasp the burden that is being carried.

The business of life for a pair of beavers is to provide themselves with a home by the side of a pond or stream that will never go dry, and not too far from trees of the kind that they use as food. Natural streams that flow slowly, or small lakes and ponds they choose, if the banks are of clay. Sandy soil makes poor mud; and rocky shores are a nuisance to beavers. Rushing streams are liable to floods and then

low water, each of which is bad for beavers. On the banks of his chosen stream or lake there must grow an abundant supply of poplars and willows.

All through this country, from the Far North to the Mexican border, the beaver used to find the necessary natural advantages he sought, and the signs of his presence still remain, though trappers and hunters, and the growth of cities, and the draining of land for farm use has driven these timid animals to the wildest regions, and reduced their numbers by killing for their flesh and fur. The range of the beaver is not to-day half what it used to be, and the numbers have lessened, until now the animals are scarce in almost all parts of the country. Fortunately they multiply rapidly when protected. Game laws in several states prevent the trapping of them, and in the Adirondacks they are being reëstablished by liberating pairs brought from other regions. They take kindly to their new surroundings, rebuild the old embankments, and establish new communities where the old ones were destroyed years ago, through the deadly work of the steel trap.

A prospector relates a story of a fight between a beaver and a mountain lion. The miner, encamped on the Colorado River at a point

where there was a broad sand flat, saw a beaver in the early morning crossing the sand flat to a strip of cottonwood timber, whence it was afterward seen dragging a stick of wood back toward the water. A mountain lion was then seen crouched in the trail watching, ready to intercept the beaver. As the latter approached the lion sprang upon it, and the two animals closed in a desperate conflict. The fortunes of war wavered, now on the side of the lion, now on that of the beaver. The miner, taking his rifle in hand, cautiously approached the combatants and watched them from a place of concealment. After fighting a long time the beaver was left dead on the field and the lion attempted to crawl from the spot, followed by the prospector, who found it unnecessary to use his rifle, as the lion soon lay down upon the sand and died from exhaustion.

## THE BEAVERS' BUILDINGS

**T**WO beavers, when they have chosen each other as mates for life, set out to find a suitable place to make their home. They may find plenty of poplars and willows growing on the boggy border of a slow stream, but if a settler's home is near by, they will go farther. The situation chosen at last may be a stream that is small, and so shallow that it scarcely allows them a chance to swim in it. But they know what they are about. The first thing is to build a dam. The water above it will form a pond, deep enough so that it will not be likely to freeze to the bottom in winter. In such a pond, beavers can hide in time of danger; in it they can store their winter supplies of food, and on its shore build their home.

The trees along the bank lean a little toward the water. This helps. The first job is to cut down a lot of them, enough for the framework of the dam. The tools for wood-cutting are the beaver's strong gnawing teeth, two above and two below, set in the front of the

jaws. These heavy chisels are worked by jaw muscles that are very strong.

A beaver sits up, propped on his tail, at the base of the tree to be cut down. He grasps the trunk between his two hands and turns his head to one side as he applies his great gnawing teeth to the trunk. A stem four inches in diameter will be cut in a few minutes, the cutter not stopping his work until the top sways, and he moves away and watches for it to fall.

Larger trees have tougher wood, and take a longer time, but two beavers, alternately watching and gnawing, will get a five-inch tree down in an hour. A big cottonwood may take several days to fell. When it is almost ready to fall, the watcher slaps the water with its tail. The working beaver then scuttles for safety before the swaying trunk reaches the ground.

Next, the trunk must have its limbs gnawed off, and trunk and limbs must be cut into lengths that the beavers can drag and carry in the water. The largest butts are left. The work of cutting up the fallen trees is very hard, and sometimes the worker has to climb along the trunk several feet above the level of the ground to get at the bases of some of the limbs. But at last they are ready for use.

The selected site of the dam has a hard clay or gravel bottom, and is the narrowest place the beavers can find. In this spot they deposit, one by one, the largest pieces of wood, laying them with their butts upstream. They drag and push these heavy timbers to the water, using their teeth, hands, and shoulders, and then swim off with them, grasped in teeth and hands. Their branches covered with foliage form a mat of brush to catch the mud brought downstream. But the beavers must weight each butt with wood or stones to keep it in place while they go for others. Gradually the stream is choked by the accumulation, and the builders see with satisfaction the results they wished to produce. The stream broadens and deepens as the dam grows higher.

When the dam is built high in the middle of the stream, the beavers attend to extending it at both ends. The mud used to fill the spaces in the underbrush layers is scooped up from the bottom and banks of the stream. Roots of grasses and water plants form a sod that holds against the current.

The soil gradually becomes grass-grown above the water line, the seeds of trees lodge on it, and twigs of willows strike root there. Thus the dam becomes at last a tree-covered

barricade, and the stream above it a pond or lake, especially deep where the beavers took up the most mud, just above the mud-faced, curving front.

In all the years that follow, the tree roots bind the parts of the dam more closely together, but the current of the stream is always trying to tear it down by washing out the mud. The wood part rots away. Always the beavers must be inspecting and repairing. No beaver dam is ever finished or beyond the need of repairs. But so long as the beavers stay, it holds; and when they leave, it gradually becomes a ruin.

The dam finished, the beavers turn their attention to a winter home, which they locate on the edge of the pond. In summer it is easy to live on the roots of pond lilies and other water plants, the bark of trees and tender green twigs. But winter is coming. They cut down trees, and trim off their branches, and build a broad conical wood pile that rises out of the water, a mass of interlacing branches held together with mud. Then they gnaw a passage up through the base of it.

The living-room of this half-submerged house is above the water line. It is reached by a long tunnel, which has its outside door two or three



feet below the water level. More often there are two tunnels leading from each house. The roof of the chamber is thin and porous in one place, so that air can get in. And the beavers keep their house neat and clean.

The winter provisions are stored on the pond bottom, near the door of the house. They would look to us like the beginnings of a new house, or just a wood pile. The beaver prefers the bark of poplars, and lays up a quantity of cut branches. Besides these, he stores roots of water and bog plants.

The heavy green wood requires but little loading with mud to keep it from floating, until it is fully water-soaked; then it stays down of its own weight. The idea that beavers *suck* the air out of green wood to prevent it from floating is quite as absurd as the idea that they lay a kind of spell or charm upon it. The brush has to be tethered to prevent it being washed away.

In winter the beaver digs out a stick, carries it into the house, eats it clean of bark, then adds the bare stick to the dam or to his roof. In times of scarcity he must eat the wood sometimes. It must be a comfort to know that there is plenty laid by, below the ice, to tide the family over the freezing weather. The beaver

is taking his vacation now, but he does not sleep the winter away, as many animals do. Every break in the weather finds him exploring the edges of the ice, probably hoping that the thaw is to go on, until all the ice turns to water, and the spring growth brings more attractive supplies of fresh green foods. Such an energetic animal finds time hanging heavy on his hands when he cannot get out and take exercise.

Inside, the house is dry and clean, with a floor of mud-plastered twigs, a few inches above the water line. It is made comfortable by bedding of grass and fine chips, and here, in May, the young are born. Two to five is the usual number. After a month of babyhood, the mother leads them out, and they learn to swim, and soon after they begin to feed on tender roots, and depend on milk no longer. The parents teach their youngsters to work; and in the fall the final repairs on the dam, and the laying up of winter food supplies is done by the whole family, working together.

Year by year, if undisturbed, the family grows larger, and new lodges, built for the use of the young ones, appear in the pond. It is now a beaver village, and the food trees along shore are all cut away. Obligated to go farther away, the beavers smooth paths and actually

dig canals by which wood can more easily be brought home. And landing places, shaped of mud, are built along the border of the pond. These are also used by day as sunning places.

When a young beaver finds a mate, the old ones go with the younger pair and help them build their dam and lodge. Then they return home leaving the youngsters comfortably housed. Thus a new family is founded, and the problem of feeding its numerous members is made easier at the old home pond.

Certain "old bachelors" among beavers are hermits, living in burrows in the banks of streams, and working only enough to keep from starving. Some are solitary, others form clubs and live together. They are scorned by their industrious neighbours, which are never idle, but possibly they do not care. They may be beavers who have lost interest in life because their mates have died. They are not welcomed into any beaver community, and they usually end their lives in traps.

## WHAT THE BEAVER HAS DONE

**T**HE building of dams and canals proves the beaver's intelligence, skill, and foresight. He is wonderful. But he is not as bright as he is represented, quite. He does not manage so that a tree's fall is always in the direction he determines. Quite as often it falls the wrong way. He does not drive stakes in the stream bed, like piles. He does not use his useful tail as a trowel. He leaves heavy logs where they are. If one is found in a dam, be sure he took advantage of its being lodged there. He could not drag and put it there — he nor his family, all working together. He rarely plasters his hut with mud on the outside. Any one who sees a beaver lodge or a picture of one can see that it looks like a pile of sticks thrown together.

It is quite unnecessary to exaggerate the beaver's virtues and intelligence. He is a wise, industrious, peace-loving creature.

You all know that a swift stream that drains bare slopes is a very turbulent and dangerous one when heavy rains come. The brook be-

comes a torrent; its waters overflow its banks, and damage all the regions it flows over. The fields are soaked and their rich soil washed away by the subsiding floods. Then before the summer is over the stream is low, its tributaries all dry, the field parched, the crops suffering.

All over the Eastern states are rich, broad meadows, where once were only narrow rivers. Beavers dammed the streams and they broadened into shallow ponds where the soil washed down from the slopes around, accumulated and gradually made rich, level "bottom" land. The beavers are gone, and their dams are gone, but the country is the richer for the farm land the beaver made.

In the wilder parts of the United States the beavers are still doing their work. The forests, destroyed by lumbering and by fire, no longer prevent the wasting of the land, the carrying away by destructive floods of the valuable surface soil. Floods and droughts alternate, and both rob and discourage the farmer. The beaver throws his dam across the stream and checks its flow. Immediately the saving of water and soil above the dam begins. Deep ravines fill gradually, and broaden into lakes that finally become rich meadows. Every river that rises in the Rocky Mountains, (so

Enos Mills says) begins its course by passing slowly through a series of "beaver meadows," some of them very extensive. A beaver colony at the head of every stream would equalize its flow, check the tearing down of soil along its course, and add greatly to the beauty of its scenery. We Americans have greatly injured ourselves by killing off the beaver for its fur. It is much more valuable to us alive than dead. Now we knew that it is very stupid as well as cruel to destroy so valuable an animal.

The beaver's work hours are the night, but he is abroad also in daytime. A sun bath is taken by lying on a mud landing or a half-submerged log. In this situation he may easily be overlooked by the person who has not very sharp eyes. Any unusual noise make him slip noiselessly under water.

The children in a beaver family romp together in the water, playing a kind of tag, pushing each other off of the bank, or log, into the water. They race, slide down the smooth "slides," made to let logs and poles roll down to the water, and scuffle together like so many schoolboys. The youngsters occasionally dawdle over their work when learning to cut down trees. They gnaw a while, then eat a piece of bark, and rest between times; and they get

scolded for it just as other children do who shirk their duties and play at their work. But when the limbs are to be carried to the house, each youngster seizes his branch in his teeth, swings it over his back, and swims off, as if in a game; though this is just as necessary work as the more laborious cutting.



## RATS AND MICE

THE mice that squeak behind the wainscoting or glide noiselessly along the wall, and disappear when you try to make friends with them, are immigrants from Europe. They did not come in by way of Bering Strait, as some hardy Northern animals have done. They came by ship, as other colonists did. They still come, hidden in bags of grain, boxes of fruit, bales of carpets. They race up and down in the ship's hold, while the stevedores unload the cargo. They have a chance to visit the mice that live along the wharves of every port of call. So mice are famous globe-trotters. A New York mouse may spend a year abroad whenever it wishes a change. There is always room for it to take passage, though all the staterooms were taken months in advance of the sailing date it happens to choose.

Rats have come from Europe in the same tramp fashion of stealing a ride. Every wharf harbours its thousands of them. They honeycomb the ground with their burrows, and find

plenty to eat by swimming about the kitchen end of vessels that are loading, and by scavenger work on the land. Their best work hours are when men are in bed, and "the coast is clear."

Rats are loathsome creatures, repulsive in appearance and in habits. The destruction of property they accomplish in a year is very great. Now we know that they carry the germs of the deadly "bubonic plague," and transmit it to human beings, whom they bite while the latter are asleep. This fact has stirred the city of San Francisco to undertake a rat-killing campaign. Every city must follow this one, if danger of outbreaks of the dreaded plague of the Orient is to be averted.

The habits of rats are well known by all who have read carefully "The Pied Piper of Hameelin." Read it again! It is a charming story that preserves forever an old tradition that has a true foundation. It is one of the poems that everybody ought to know by heart,

## AMERICAN RATS AND MICE

**B**ETTER behaved than the slum-dwelling city rats from foreign lands, and yet unpopular with people for good reasons, are the rats and mice that infest the fields, living on the crops.

The cotton rat, a brown and yellow mottled creature, smaller than a house rat, and with a shorter tail, injures the cotton crop. The ricefield mouse (which is a rat) infests the lowlands, damaging the rice crops. The harvest mice damage the grain fields, and later on the granaries, in the North. Field mice range all over the country, taking toll of the farmer's crops, yet harvesting seeds of many wild plants in which the farmer has no interest.

In the Far North live the lemming mice, little creatures that remind one of guinea pigs. Their short legs and tails scarcely protrude beyond the long fur that changes from brownish gray in summer to white in winter. They store away vegetable food for winter, but the foxes

kill many of them, and they are the prey of all the bigger wild creatures that sniff their sleeping quarters, and dig them out.

The prettiest mouse in this country is the white-footed, or deer mouse, brown above and white beneath. The great eyes of this little beauty are glorious as a deer's. It makes its nest on the ground or under it, or in the hollow limb of a tree, far up among the green foliage. Often they nest in the skulls of buffalo that bleach on the plains. Cleanly as she is beautiful, the white-foot attracts every unprejudiced person. With her little ones clinging to her she runs for safety, and we hope that she may always find it.

Voles are little brown mice of the Northwest. Kangaroo mice and rats, with long hind legs and cheek pouches, represent two distinct families that travel in kangaroo fashion, their front feet tucked under their chins. The jumping mouse is no larger than a house mouse, yet a leap of ten feet is possible to it. In this feat, it outdoes all other high jumpers in the animal kingdom.

So, at a glance, we look at the great family of the mice and rats, astounded at their numbers and wide distribution, and full of wonder in their success in the struggle against extermina-

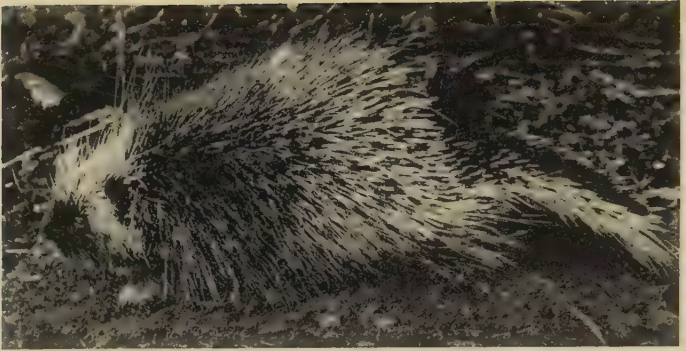


At any age the white-footed or deer mouse is the most beautiful  
and attractive member of its family

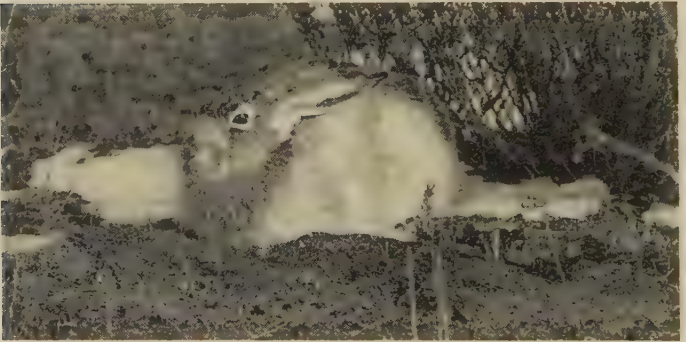


The muskrat is not a famous beauty, but it has more good traits  
than any other rat



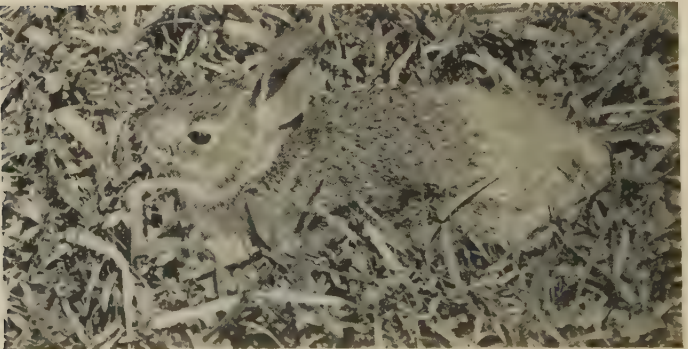


Most animals know better than to attack the porcupine



*Copyright, 1894, by A. G. Wallihan*

The big, athletic jack hare, commonly called "jack rabbit," is a western species



Molly Cottontail hiding in the dead grass

tion. While the millions are being destroyed more millions are born. So it goes.

We so hate the thought of a rat or a mouse, that the question comes to us at last: "What are they here for?" And another follows: "Do rats and mice serve man in any way?" Ernest Thompson Seton has best answered them both.

"What moss is to the reindeer, what grass is to the cattle, the mouse millions of the North are to the Northern carnivores, from bear to Blarina. . . . Mice eat the seeds, stems, and roots of the grasses. They turn grass into meat to feed their big, bloodthirsty cousins. It is the way of the world. The grazing herds feed man."



## THE BEAVER'S LITTLE COUSIN, THE MUSKRAT

**I**N THE prairie states, one of the farmer's first problems was to get rid of the multitude of small, boggy ponds that dotted his land. Often wide stretches of boggy ground, covered with cat-tails, bulrushes, and arrow-heads, surrounded the open water, and a sluggish stream connected a chain of these shallow "sloughs."

The lord of the pond was the muskrat, which rarely showed himself to anybody, but whose house lifted its rounded dome above the water and announced his presence. Among the reeds, and on the muddy bottom he found food and building materials, and he had no need for anything the pond did not supply.

I remember once seeing this big, brown rat swimming with his head above water, and making very good speed. When he saw me, his surprise was as genuine as mine. He disappeared and I got a glimpse of the long, bare rat-like tail streaking after him, as he swam swiftly through the clear water, as far as possible below the surface.

When danger approaches, the first muskrat to sense it, if he be sunning himself on the bank, slaps the water with his flat tail, and dives with a tremendous splash. All the muskrats within reach of this sound follow suit. This coöperation in defending each other is sign of intelligence. Often the houses are enlarged to accommodate more than one family. But each has its own doorways. The families do not live together.

Two muskrats work together to build the home and rear the young, which are born in the spring in the airy, dry, clean chamber of the house. When they are a month old the three mouse-coloured youngsters are able to take the plunge down into the steep tunnel that leads from the home out to deep water. It may be short or long, straight or crooked. It is longest when the house is on the bank of a shallow pond with gradually sloping bottom.

The making of a house interests the young muskrats before midsummer is past. The beginning of a house is the laying of a foundation. From the bottom the pair dig up mud, and the débris of living and dead plants. A bank of this plaster, bound together by vegetable fibre, is overlaid with reeds and grass.

The island that rises is surrounded by deep water, cleared and deepened by the excavation for materials. So loose is the top of the structure that when the builders run their tunnel up through the foundation their heads come up in the midst of a loose pile of reeds. This gives good ventilation, but winter is coming. More reeds are cut and laid on above. The weight presses the mass down. They gnaw it out from below, to keep their house of comfortable size. Another exit may be made, for emergency use, and the tunnels are deepened. At last the roof is tight, except in one place, which is left thin on purpose to let in fresh air. Now they are snug for winter. The dead reeds standing all about are of the same colour as the reed-thatched house. This is good, for it keeps the dome from being too conspicuous.

The muskrat lives on the tender roots and bleached stalks of the plants in his pond or stream. He does not need to go away from home. After his house is done, he builds floating rafts of reeds, tethered to a few growing ones. These rafts may become permanent homes later by putting some more work on them. But they are most useful as they are. In summer they are used as feeding places. In winter they furnish breathing places when

solid ice covers the clear water, and refuges when the house is attacked by an enemy.

The muskrat loves to sit out on a little promontory and enjoy the sun while he eats. So he constructs piers of mud for landings, just a little above the water level. When ice shuts him in, and air is not easily supplied, he finds the edges of his rafts and wharves full of air bubbles, and often there is a skin of ice held up by these structures while the water flows peacefully below, with an inch or two of air under the ice blanket—just what pleases the muskrat best.

All winter, unless the ice freezes solid, food is easily dug from the bottom to help out the store of green stuff collected at the house. In severe times, the muskrats have to eat their ceilings and walls. A thaw eases the famine, always.

In autumn the muskrats go forth, if need be, looking for new locations. They are not rapid walkers, and do not feel at home on land. They often fall victims to dogs, and in their perplexity and fear will often fight viciously to escape.

In late winter the trapping season is on, and thousands of these interesting creatures are taken for their fur. It is a brutal business.

It is bad enough to be killed by a mink, or snatched by an owl, but steel traps are cruel beyond words.

As inoffensive and industrious as a beaver, the muskrat shows intelligence of the same order, if not quite so high. Muskrat houses and rafts do the same sort of work for the improvement of land as the beaver's dams. The animals deserve a fighting chance, and this they do not get from the trapper and the man who spears them through the frail roofs of their houses. The worst enemy of the muskrat is weather that freezes his pond to the bottom.

The name comes from the secretion of musk which gives the animal a rank odour, especially inspring. Furriers call muskrat fur "mink" and "marten." It is always in demand for caps and collars. The under fur is thick and fine, like beaver, when plucked of its coarse long hair. It is then dyed dark brown and sold as "electric seal."

## THE POCKET-GOPHER

A STRANGE little creature, in both looks and actions, is the pocket-gopher, cousin to rats and mice and porcupines, but very different in habits from most of its kin. Its heavy brown-furred body is mounted on short legs. The fore feet are large and strong, with five toes, the middle three of which wear long, hooked claws for digging. With these tools the gopher digs out long, underground tunnels in which he lives, about three inches in diameter, and eight inches below the surface. The hind feet are longer, with small, short claws, used for crowding the fine dirt back in the burrow. The immense, fur-lined cheek pouches, opening outside the mouth, are used for the carrying of food — convenient lengths of tender grass, bits of succulent herbs, and grain. The strong, squirrel-like, gnawing teeth in front cut off roots and stems with remarkable quickness. The short, bare tail is an organ of touch. The fur is soft, like that of a mole, the eyes and ears are small.

In fact, the pocket-gopher lives like a mole, and looks somewhat like one.

Mounds of fine earth thrown up on a green lawn, or across a field, tell where the pocket-gopher's tunnel opens, for the unloading of the material his hands have dug out. "Gopher hills" they are called and prospecting with a stick, one can locate the horizontal tunnel, below the vertical branch through which the patient burrower pushes the dirt up, and dumps it where it will no longer be in his way. It is not hard to locate the burrow, with these "hills" to guide us, though the course does not go from one to another in a straight line. If the hills are fresh, we may overtake the digger. His little snub nose must be calloused by grubbing at the hard wall of earth. His hind feet brace the body forward while the curved front claws work rapidly, tearing down and shovelling away the dirt, which the hind feet shove still farther behind, keeping the space clear for the free movements of the worker.

At intervals the digging ceases, and the loose earth is cleaned out of the tunnel. The broad palms are spread in front, and the dirt is pushed back. Up through the vertical tunnel it is pushed, and out on to the growing



"hill." How he ever does it, without showing himself, is a marvel. Why he doesn't carry it in his cheek pouches, I cannot understand. But he doesn't.

Another delay may be to dig a side pocket for storing food, but the main burrow goes on and on, and it often happens that night comes down before the eager boys, who are exploring such a burrow, come upon the industrious animal.

The gopher knows what he is about. His life is lived among the tender roots of grasses. He goes out at night for stems and seeds, and carries them by pocketfuls into his granaries. When the sun is well up he opens his burrow at several places, and lets in the warmth and fresh air. By noon he closes the doors. This is but one indication that his habits of life are good. He is a cleanly beastie.

The harm he does to man is that he ploughs the ground in his own way, and takes toll of the grass and grain roots. This may blind the farmer to the larger fact that gophers and earthworms are wonderful tillers of the soil. To their untiring work before men came is due the remarkable fertility of virgin soil. The prairie gophers worked without their partners, the earthworms, over much of the

Western country, but they did their work well, and are still doing it, bringing up bushels of finely crumbled soil, and burying under it the grass roots that will be well-rotted humus in course of a year. Humus makes loam.

Where pocket-gophers are numerous the rain that falls is held in the porous soil, as in a sponge. Here it is when the roots of plants need it. So we must remember that this animal helps to check floods and to prevent droughts.

The pocket-gophers are well recognized by farmers in the West as among their most injurious enemies. Living as they do almost entirely on roots and tubers, they are highly injurious, and they also do much damage in fields of grain and fodder, not so much by what they eat as by the amount of surface which they cover with fresh earth from their burrows. Doctor Merriam corrects a widespread erroneous belief when he tells us that the cheek pouches, or pockets, are used exclusively for carrying food. It is the general impression that these pouches are used also for carrying dirt, in its removal from their burrows. An interesting account is given of the actions of a tame pocket-gopher, which was for some time kept in confinement, and carefully ob-

served in order to learn how food is placed in the cheek pouches. Doctor Merriam says: "The animal soon became sufficiently tame to eat freely from the hand, and was commonly fed bits of potato of which he was particularly fond. The manner of eating was peculiar and interesting, and showed an ability to use the huge fore feet and claws in a way previously unsuspected. After satisfying the immediate demands of hunger, it was his practice to fill one or both cheek pouches. His motions were so swift that it was exceedingly difficult to follow them with sufficient exactness to see just how the operation was performed. If a whole potato was given him, or a piece too large to go into the pouch, he invariably grasped it between the fore paws and proceeded to pry off a small piece with the long lower incisors. He would then raise himself slightly on his hind legs, and hold the fragments between his fore paws while eating, for he usually ate a certain quantity before putting any into his pouches. If a small piece were given him, he took it promptly and passed it quickly into the pouch. Some pieces were thus disposed of at once; others were first trimmed by biting off projecting angles. As a rule one pouch was filled at a

time, though not always, and the hand of the same side was used to push the food in. The usual course is as follows: A piece of potato, root, or other food is seized between the incisor teeth, and is immediately transferred to the fore paws, which are held in a horizontal position, the tips of the claws curving toward one another. If the food requires reduction in size, the trimming is done while held in this position. The piece is then passed rapidly across the side of the face with a sort of wiping motion which forces it into the open mouth of the pouch. Sometimes a single rapid stroke with one hand is sufficient; at other times both hands are used, particularly if the piece is large. In such cases the long claws of one hand are used to draw down the lower side of the opening, while the food is poked in with the other. It is obviously impossible for the animal to pass fodder from the mouth to the pouches without the aid of its fore paws.

“The most remarkable thing connected with the use of the pouches is the way they are emptied. The fore feet are brought back simultaneously along the sides of the head until they have reached a point opposite the hind end of the pouches; they are then pressed firmly against the head and carried rapidly forward.

In this way the contents of the pouches are promptly dumped in front of the animal. Sometimes several strokes are necessary. I am not prepared to say that the animal cannot empty the pouches by means of the delicate investing muscles, but I have never seen them emptied in any other way than here described."

## THE PORCUPINE

ONE August night a camping party in the Big Horn Mountains took refuge from a storm in the deserted shack of a sheep herder. The wind had blown down their tent in the middle of the night, and fortunate they were to find another, more stable, roof. The wet tarpaulin was spread on the dirt floor of the rude cabin, the beds laid on this carpet, and here the sleep, rudely broken by snow and wind, was resumed.

Before morning the little girl of the party called her father, and told him that something was biting her foot. Thoughts of rattlesnakes and a hundred other horrors filled his mind, as he groped for a box of matches, a candle, and his gun. Something bit his foot, too, as he stepped to the rickety window shelf. A light put his mind at ease, for he saw porcupine quills scattered thickly over the bare floor. Any foot that strayed beyond the tarpaulin gathered up quills, and each one that fastened itself on the sole began to work its way farther

in. This was what caused the pain. The "quill-pig," or "porky," as the sheepman called it, had had an encounter with a dog, and the shack had been the scene of the duel. This was learned the next morning.

A strange creature, and stupid beyond belief, is the porcupine. A big rat, ugly, small-eyed, heavy-set, short-legged, blundering in gait, with but one way of protecting itself against an enemy — humping its back and bristling its wicked coat of quills. When attacked, it hides its head, if there is a convenient root or boulder to tuck it under; then flattens its body on the ground, rears its spines above the long hairs and close wool of its coat, and lashes its stubby tail from side to side as a challenge and a warning. The vulnerable parts of the body are all protected. The enemy must be brave or reckless that tackles the "porky" now.

Porcupine quills are easily loosened, but it is not true that they can be thrown out like little darts at the will of the animal. This is an old and well-established falsehood that some people still believe.

The dog that seizes a porcupine gets a mouthful of quills for his pains. He cannot shut his mouth till somebody removes the painful and



poisonous darts. It is a lesson dogs learn and remember. Foxes and wolves have no helper near, so they pay for their rashness with their lives, as the barbed points work farther and farther in. The puma, lynx, and wildcat manage better than the dogs, but they are wisest when they let the porcupine alone. The fisher has the greatest skill. He patiently and skilfully handles the prickly beast, at last managing to roll it over. On its back, it is helpless. His claws tear open the skin of the under parts, where the spines are short, and the fisher feasts, leaving the empty skin behind him.

The reason why campers and lumbermen hate the porcupine is that the stupid beast gnaws its way into their cabins, chews up their wooden utensils, and eats all kinds of foods that have any salt in them. Salt is necessary for all animals. Nature seems not to supply it in sufficient quantities to meet the demands of a porcupine's appetite. For all that, it is hard luck for a man to return to camp and find the salt meat and butter, and even the wooden bowls and spoons, all consumed by porcupine visitors. Shooting will not frighten them away, as long as they suspect that there is a taste of salt in anything.

The porcupine lives in the cold regions of this country, chiefly in Canada. Its home is by preference the evergreen forests; its favourite food, hemlock bark. In the dim twilight it may be seen, hunched comfortably in the crotch of a tree, gnawing away at the fragrant bark; or out on a criss-cross mat of small limbs it sits, pulling the twigs through its mouth, and thus stripping them of the feathery foliage. They do not always girdle the trees they feed upon, but they certainly kill a great many, both evergreens and hardwoods. They are fond of the full-budded, succulent twigs of poplars in the spring.

Porcupines sleep in their holes under rocks and in hollow logs in winter, but they are all out whenever they grow hungry. Why hibernate, when fresh bark is always to be had, for a little exertion?

In spring two or three baby porcupines, very large and bristly, are born, and by August they are abroad taking care of themselves. Surly and crabbed when attacked, the porcupine is, after all, a harmless creature, which attends to his own business. Fervently as the lumberman hates him, yet he favours game laws that protect the creature from chance hunters. In the stretches of evergreen forest

a woodsman who has lost his way is often glad to find a porcupine, whose flesh keeps him from starving. Under no other circumstances will a white man eat porcupine meat. Indians are less particular. They rather enjoy it.

Indian beadwork and basketry are adorned with pleasing designs worked out with quills of the porcupine. The Indian squaws found out the most artistic uses for these little needles.

## THE HARES AND RABBITS

**A**MONG the larger gnawers is the family of which Molly Cottontail is the best known member to most boys and girls in this country. They all have fine, soft, thick fur, short bushy tails, very long ears, and long hind legs. They feed upon vegetable fare, for the most part.

Dr. W. T. Hornaday distinguishes sharply the *hares*, (big, swift-running, long-eared, long-legged) from the *rabbits*, (small, weak-running, short-eared, short-legged). Rabbits always live in burrows while hares build their nests above ground. But to call Molly and her near kin *rabbits* and their big cousins all *hares* is a lesson that people do not learn, and will not. But we can call the big fellows *hares*, and so set a good example.

*The Snowshoe Hare* (I almost said *rabbit*, for that is the name by which it was introduced to me on a mountain trail in Wyoming) is the *varying hare*, for its fur changes from gray-brown like the woods carpet to white when

winter comes on. It is a big hare, with wonderful, spreading feet that carry it safely and swiftly over snow of any depth. It ranges over the cold half of North America, following the high mountain ranges south to Virginia and New Mexico. It eats the bark and buds of poplars, willows, birches and other trees, stripping the brush wood.

This creature is harmless, but it has countless enemies and diseases. Yet it flees the enemies, and survives its diseases in sufficient numbers to make it plentiful over a wide territory, even though "the plague" kills thousands every seventh year.

*The Polar Hare*, white the year round in the regions of perpetual snow, grayish and white farther south in the brief summer, is the prey of all the creatures more fleet or more cunning. But what it finds to eat during the long Artic winter is hard to guess.

*The Jack Hare* of the West and Southwest swarms over the country from which wolves, coyotes, and foxes have been exterminated. The ears of this hare are often six inches long, and he weighs six pounds. No other of his family equals him in size or in athletic ability. He will keep ahead of the best dog for miles at a stretch. Naturally, very great damage

to trees and grass is done by these hares, and hunters in many sections come together regularly each year for rabbit drives, in which thousands of the animals are killed.

*Cottontail Rabbits.* My first acquaintance with young rabbits began in the strawberry patch, one June morning, long ago. A litter of four little cottontails, with eyes not yet open and ears no bigger than a rat's, lay in a burrow-like hollow, protected by a mass of dried grass and fallen leaves, and a lining of fur from their mother's breast. I should never have seen the nest at all, except that I stepped into it, *with one bare foot*, and the feel of those soft, warm little bodies is something I shall never forget. Fortunately for them I was a small girl, and I stepped upon one side of the nest; only my toes touched the squirming little bunnies. They must have wondered why I went away so fast, and what there was to scream about.

Cottontails scurry out of the garden, and dodge into the brier patch, bobbing their white tails after them, as if in defiance of the dogs which can't follow. They have been nibbling cabbage stumps, and they are welcome to them if they will leave the stems of young fruit trees alone.

Think what a struggle the rabbit has to live! How many bloodthirsty beasts and birds of prey are on its trail! See the trail that Molly leaves behind her in the soft snow. Its photograph lines the covers of this book.

The two front feet make tracks so close together that they look like a dumb-bell. The hind feet are long and far apart. With each leap, the front feet strike the ground first close together. The hind legs straddle the front ones, and make the two tracks you see wide apart, ahead of the fore feet. It is a kind of "leap frog," isn't it?



## UNGULATA

The order of hoofed mammals.

Terrestrial, herbivorous animals, of large size,  
with digits ending in broad, horny nails.  
Incisors often wanting in one or both jaws.

### A. Even-toed group.

Sub-order of 4-toed animals.

*Families:*

1. Hippopotamus.
2. Pig.
3. Peccary.

Sub-order of 2-toed animals.

*Families:*

1. Camel.
2. Llama.

Sub-order of 2-4-toed animals—the cud-chew-  
ers.

*Families:*

1. Deer — 4-toed
2. Giraffe — 2-toed
3. Pronghorned antelope — 2-toed
4. Cattle, sheep, and goats — 4-toed

### B. Odd-toed group.

*Families:*

1. Horse — 1-toed.
2. Zebra — 1-toed.
3. Rhinoceros — 3-toed.
4. Tapir — 3-toed.
5. Elephant — 5-4-3-toed.



# THE ANIMALS WITH HOOFS

## FAMILY TRAITS

**W**HEN the toe ends in a broad nail, instead of a narrow claw, we call it a hoof. This distinction sets apart a great group of animals, that are alike in a few other traits. Five is the greatest number of toes any animal has. The families of hoofed mammals are grouped according to the number of their toes, of which the hoof is the most obvious part. Gradually the number of toes has been reduced in different groups. The horse has but one toe left, though ancestors of his show all the stages by which one after another was abandoned.

Study carefully the classified list of the hoofed mammals on the preceding page.

## THE EVEN-TOED GROUP OF HOOFED MAMMALS

### PETE, THE HIPPOPOTAMUS

A MAN in uniform came into the elephant house with a dozen raw potatoes in the bottom of a wooden bucket. He opened a door and entered an empty compartment, which was furnished only with a low rack which held a bundle of hay. A stairway led down half a dozen steps, into a big pool, as big as the other compartment, and a part of it. A straw or two floated on the surface of the water, which was still and dark.

The keeper rattled the potatoes in the bucket and walked to the head of the stairs, calling, "Pete! Come up here, you old curmudgeon." We all looked where he was looking. A few bubbles rose to the top. Then a broad black shield came to the level of the surface; some distance away, a bulbous eye and a broad snout of huge size were outlined. Then the water boiled as the vision disappeared. "He's

gone down to turn around," said the man. In a moment the huge bulk of the river horse came into view, headed in just the opposite direction, and as he lumbered up the stairway, Pete opened his mouth to receive his reward, the biggest potato in the bucket. The man threw it, and he would have a very poor aim who would miss the mark. For Pete had opened his mouth to receive it. And it is like a huge cavern — that mouth.

Hippopotamus means "river horse." There were few domestic animals when the Greek zoölogists chose this name, but we all agree with Oliver Herford, who explains, and then complains:

His curious name derives its source  
From two Greek words: *hippos* — a horse,  
    *Potamus* — river. See?  
The river's plain enough, of course;  
But why they call *that* thing a *horse*,  
    That's what is Greek to *me*.

Instead of being a relative of the horse, this hulking creature is most closely related to the hogs. In fact, his family is one of three in the sub-order of the swine. So "river hog" would fit him better.

Out in the shady yard Pete good-naturedly

watched Miss Green as she set up her camera and focussed it upon him. We wanted him to show a foot with the four-nailed toes that class him with the other hoofed mammals. The water still shines on his rough, leathery hide, and his expression is bland as we could ask. He is full of clover hay, potatoes, and peace.

I believe that Pete is as happy here as if he basked in the sun on a sand bank in some East African river. Yet hippopotami can show temper and use their jaws with deadly results. So it is not safe to trust so big a creature with much liberty. Those born in captivity rarely have any trials to endure such as rouse the angry passions of their hunted kinsfolk in the wilds of Africa, who sometimes overturn boats and kill the men in them.

Though a sluggish, heavy creature, the hippopotamus is surprisingly agile when roused, and it travels long distances without resting, if the search for food makes it necessary. These tramps are made by night, as a rule. The plantations near streams inhabited by hippos are often devastated by them and growing crops destroyed, for these huge vegetarians like most green things of succulent growth, and acres go down in a single night when the herd enters a field.

The hippo likes best to take his ease by day in some lagoon or deep pool, under the shade of border trees. The water is cool at the bottom, and the animal can stay down about three minutes; then he comes up snorting and fills his lungs for another plunge.

Usually they herd together in considerable numbers, the timid youngsters on their parents' backs, for they are born on shore, among the reeds, and swimming is an accomplishment they have to learn by practice.

Floating is a favourite pastime. The bulging eyes, the ears, forehead and snout, will show above the surface. Thus, himself almost invisible, the hippo can observe all that is going on, and promptly sink if danger threatens. If their heads are close together the members of the herd are standing almost upright on the bottom.

In safe streams or lakes, far from men with guns, taking a sun bath on a sand bar is a pleasant way to pass the afternoon. The crocodiles, and hippos of all ages sprawl together, and soak in sunshine.

The biggest hippopotami live in lakes. A specimen may weigh three or four tons. Smaller ones only inhabit small streams. The natives consider hippo meat very good, and



they are glad to have the animals killed for various reasons. Often boats are attacked and upset by the ugly old fellows which recognize men as their enemies. They come close to a camp by night grunting and squealing, splashing and wallowing in the mud puddles, enjoying their freedom, evidently emboldened by the friendly dark by which they are protected.

## WILD PIGS

**M**R. DUGMORE met a stranger in the African wilds that turned out to be the red forest hog, giant among wild swine. It is a rare and shy animal, unknown to scientists until 1904. It has not large tusks, like the wart hog, but great wart-like growths come out below the eyes.

The huge head, supported by a thick neck, seems too heavy for the body.

Wart hogs are the most ill-favoured of the pig family, tall, thin-bodied creatures with great, up-curving tusks of wicked power, and warty excrescences adorning the cheeks. The warty face is an awful caricature of the regular-featured and rather handsome countenance of our domestic hog.

When undisturbed they root and graze on the African plains, the female and her troop of pigs together, lying in the shade in the heat of the day.

Disturbed the wart hog stands with head and tail up, ears cocked forward, legs far apart, ready to scuttle to cover, with a snort,

or stand its ground, and tear open the body of a dog with its tusks. The pigs are shot for food by hunters, and their flesh is said to be delicious pork.

Have you heard of the old man who, on seeing the ugly-featured wart hog at the Zoo, turned to his companion and said: "There *ain't* no such critter, I don't believe." We have felt the same astonishment. It is hard to trust our eyes, and believe all they tell us at the Zoo.

The wild boar is the parent stock from which domestic hogs have sprung. It lives still in European forests; its food, the roots of many plants, acorns, nuts and the like. Boar-hunting has for centuries been the sport of noblemen in various countries, and still offers plenty of dangerous excitement to hunting parties. A wild boar at bay can kill a dog by a thrust of one of his great tusks.

The wild hogs in America are the spare razor-backs and other athletic swine that have sprung from cultivated breeds. Their ancestors, displeased with their quarters or their rations, took to the woods, where a diet of nuts and acorns and other wild pasturage satisfied all their needs. They are very different from their lazy, fat cousins in the pen, but they have their freedom.

## THE COLLARED PECCARY

**W**HEN hunters come back from the far Southwest, telling about the droves of wild pigs they saw in the valley of the Rio Grande, it is not always clear just what animal they are talking about. The peccary is the native wild pig of the region, and if your hunter means this creature, he will tell you that the coarse, long hair, longer and thicker than that which clothes ordinary pigs, is dark and grayish in effect, because each hair is banded with black and white. A pale, narrow band, like a white collar, runs from the throat up to the shoulders and meets a bristling mane that runs down the spine, from the head to the mere stump of a tail. A good-sized peccary is about three feet long, with a thin, flat body mounted on slender legs. Its hoofs are cloven, but besides the two toes it walks on, the fore foot has two elevated toes, and the hind foot one. The eye-teeth are developed into tusks, four in all, with which the peccary can do much harm to a dog, or to any other

creature that rouses its anger, or brings it to bay. One mode of defense is to emit the secretion of two glands located on the rump. It has somewhat the odour and strength of the skunk's defensive secretion, and usually relieves the peccary of its enemies promptly.

The heavy head of the peccary bears short little ears, and ends in a pink snout, flexible and constantly in use as an organ of touch.

In the woods with the peccaries are often found wild pigs whose ancestors escaped from the pens of farmers, preferring liberty, with acorns and pecans and the roots of succulent plants for food, to the comforts and luxuries supplied them in the domesticated state. Perhaps they took notice of events on the farm, and suspected that as they grew fatter their owner looked on them with more interest. Possibly they knew that the more generous the hand that flung them corn, the nearer came the time for making hams and sausages!

Big black hogs, descended from Berkshire stock, but for generations the wild companions of peccaries, are fierce fighters, and, thanks to the abundance of their food supply, they grow to unusual size. Their flesh is excellent in flavour, and a welcome addition to the bill of fare of the camp.



Blandly good-natured after his bath and breakfast, Pete, the Zoo hippopotamus, poses for a picture





Two visitors from across the Mexican border: the collared peccary, a wild pig; and the armadillo, which is protected by a coat of mail



Razor-back pigs have not such good breeding back of them as these black fellows. The shiftless farming done in many parts of this country produces poor farm animals. The athletic pig got through the fences built to confine him, and he took to making his own living in the woods. He is the "yaller dog" of the swine in North America. He is half wild, half tame, according to circumstances. His hams are good eating, but he runs off all the fat good feeding puts on his bones.

Peccaries are rarely eaten, because it is so hard to dress the meat and have it free from the skunky odour. If this were possible, the meat would not be bad at all. So hunters say who have tried it.

If taken when quite young, and the scent glands destroyed, the peccary makes a gentle and likable pet for children. But teasing or abuse will change its temper utterly, making the animal treacherous and dangerous to have about. One such pet, with an unusually affectionate disposition, had the habit of rubbing against the legs of people, as he passed. Some strange teamsters kicked it when it came near them. This ill-treatment ruined the creature's nature, and it had to be killed.

Nobody who has seen a peccary, or heard one squeal, or saw a wallow where one or more of them had luxuriously rolled in the cool mud, would a moment hesitate to say that it is "some kind of pig."

The South American peccary is fiercer than our good-natured species. You may see in a menagerie some day the white-lipped peccary found from southern Mexico to Paraguay.

## THE CUD-CHEWERS

### THE RUMINANT STOMACH

THE peculiarity of the ruminants is their four-roomed stomachs. There is a large vestibule into which the fresh nibbled grass is put, as swallowed. When it is well filled the tired grazer leaves the sunny pasture slopes to lie down in the shade. Here the chewing is done; a mouthful of grass at a time comes up, and is ground fine between the molars, which have sharp enamel edges standing up above the complexly folded bony substance that forms the teeth. This grass pulp, when swallowed, goes into the second room of the stomach, where digestion begins. Passing by degrees to the third and fourth rooms, the process is completed, and the nutriment is absorbed, leaving only the indigestible fibres to be excreted.

The grazers have front teeth below that cut against a hard, toothless gum above. There is little use for eye-teeth, so they are either lacking, or very poorly developed. The side jaws are set with full rows of molars.

## THE ELK, OR WAPITI

**A** STATELY deer, as tall as a horse, with slender, graceful limbs, and noble head supporting round antlers of many points — this is our American elk, the proudest, handsomest, and largest round-horned deer that lives.

The elk's October coat is brownish gray on the body, deeper brown on neck, breast, and limbs. The large buff "rump patch" includes the short tail. A dark stripe outlines this area. The colour of the cows is not so bright as the bulls'.

As winter wanes, the colours fade to dirty white in the elk's shaggy coat, and through the early summer it is slowly shed. The new coat of close, reddish-brown hair makes the animal look smaller. Elks are often seen plunging in the pools to get away from the pest of insects. The young lose their spotted coats now, and their plain new coats show the rump patches.

The print of an elk's hoof in the snow shows two large parts in front, and two small ones

behind, in each foot. These are the nails of the four toes. All deer have the same number. A tuft of hair inside the hock protects the scent gland, by whose excretion a dog tracks any deer.

If you will open the atlas at the map of Wyoming, and find the Yellowstone National Park in the upper left-hand corner, your eye will soon light on a place below the Park called Jackson's Hole. This place is not very interesting, except as it names the region where the elk herds of the Yellowstone spend the winter, and are comparatively safe. Here are sheltered valleys where the snow rarely gets so deep that the animals cannot get at the grass underneath. The hunting of elk is prohibited; the man who shoots one is a law-breaker.

About the end of winter, as the snow melts, the elk drift back to the Yellowstone, climbing by easy stages to the higher levels. The winter coats are worn and faded, but shedding these is a slow process. The astonishing, sudden change that comes to the bull at this season is the shedding of the antlers, and the growing of a new and larger pair. The cows have no antlers.

The change of antlers occurs every spring,

and it makes another story. So we will follow the elk as they slowly ascend the slopes, keeping pace with the advance of spring, finding the food they like. This is not the tenderest grass, but coarser, weedy growths, and the twigs of poplars and other trees, budded and full of sap, and later leafy. The elk is a browser as well as a grazer.

In May the cows give up the climb, and explore the upland valleys, while the bulls go on toward the wind-swept peaks, where they feed and let their antlers grow.

The fawns are born in shady hollows chosen by their mothers. These must be screened by trees that grow near running water, in order that the necessities of life be supplied. The fawns are yellowish, dappled with white spots, but they are not made conspicuous by them. The dancing sunbeams that stream through the bushes are spotted too, as they fall on the dry leaves all around the carefully hidden fawn. The big, bright eyes are more noticeable than the white spots.

In a very few days after birth the fawns are out with their mothers, and by the end of summer their spots fade. They get a new coat in late fall and are rid of their spots forever.

Toward October the bulls have rejoined their families, splendid in new antlers and glossy new coats of bluish gray. Now the pride of the elk shows in the way he lifts his head crowned with those shining antlers. His eye is bright, his voice calls a challenge to any and all rivals. His neck swells; his bugling wakes the echoes; he is ready to fight.

The cows, too, are in new coats and their pretty fawns are by their sides. It is a splendid sight, the hundreds moving after their leader, who is an old cow.

George Bird Grinnell's pen picture of a herd of elk is so vivid that I quote it here:

"From a distant ravine comes a shrill, sweet whistle of a great bull elk as he utters his bold challenge to all rivals, far and near. You can see him plainly as he walks out from the timber and slowly climbs the hill, followed by the group of watchful cows; and he is a splendid picture. Short-bodied, strong-limbed, round and sleek-coated, he is a marvel of strength, if not of grace. His yellow body is in sharp contrast with the dark brown head and mane, and the hugely branching antlers, widespread and reaching far back over his shoulders, seem almost too much for him to carry; so that as he marches along with ponderous



tread each step seems to shake the earth. At intervals he throws back his head and utters his bugle call, and before its wild notes reach the ear you can see the white steam of his breath as it pours forth into the frosty air. His cows feed near to him as he steps along, or if one straggles too far he moves slowly toward her and shaking his mighty horns warns her to return. If you fire a shot at one of that band, speedily the old bull will show himself the herder and protector of his family. Rushing about from point to point he will gather up the cows and calves into a close bunch and will drive them off over the hills, threatening the laggards with his horns and using them, too, with cruel effect, if the cows do not hurry. No chivalry, this, on the part of the old bull. He drives them forward, not because he wishes to protect them from death, but because the cows are his and he does not intend to be robbed of his wives and children."

The progress down to the valley is marked by tragic encounters between rival stags. The weaker one is often killed outright. Sometimes the horns become locked so that neither combatant can free himself, nor longer injure the other. They struggle till the strength of the weaker one gives out. The herd moves

on and leaves them; nothing can help now. The survivor is the most to be pitied. If wolves attack them, they bring death mercifully soon.

In the Big Horn Mountains, east of the Yellowstone Park, the ranchmen and hunters find these interlocked antlers occasionally. Two fine stags are the prize of those who have the luck to see the fight.

A pair of antlers firmly caught in the crotch between twin trees is evidence of another tragic death. The stag was rubbing the velvet off of his horns, and they became lodged by pure accident. His struggles to free himself made things worse.

The ranchman picks up any fine pair of antlers he comes upon in the woods, and mounts it on the ridge pole of his barn or house. If he shoots a fine stag, his antlers have the place of honour. It was a common decoration of the low buildings of the scattered settlers when I drove through that region in 1895. But even then elk were few.

The "elk's tooth" which has long been a coveted trophy, and especially sought by members of the Order of the Elks, is a small eye-tooth, two of which each stag has in the upper jaw. Those of the cows are very small,

and so are ignored by collectors. To supply the demand for elk's teeth, thousands have been killed, in spite of efforts at protection in the few regions of the Rockies where the noble animals are still found. It is shameful. Once they roamed as widely as the bison.<sup>i</sup> They have shared its fate. Have Americans been too busy to notice that the noblest of our native deer, which is the largest and finest of all round-horned deer in the world, is reduced to a few scattered herds?

Fortunately for boys and girls who care, elk are easy to keep in zoölogical gardens. Small herds have been started in many parts of the country, and now, though they must be kept in by solid fences, they are on exhibition. We may make the acquaintance of the family from time to time, and see that wonderful performance—the shedding of the antlers, and their replacement by the new pair.

## HOW THE ELK CHANGES HIS ANTLERS

**F**OR the first summer the baby elk is a yellow fawn, dappled with large white spots, its head as hornless as its mother's. Next year, if it be a male, the first horns appear, a pair of short, unbranched, straight spikes, called the "dog antlers." They, like all that follow, are solid and rise from blunt knobs on the frontal bone of the skull. Late in winter these baby horns are dropped, and new ones appear, larger and with more tines. Each spring the antlers are shed, and new, larger ones, with more branches take their places. If the stag is sick, or is injured while the horns are growing, they will be inferior. If the following year finds him in perfect condition, the antlers will be superb. Year by year they register the health of their wearer. No two antlers are alike, even on the same head.

Don't believe the story that counting the points counts the years of a stag's life. Men who have herds of elk have kept the antlers of one stag, year by year, as he cast them off.

They find a gradual increase in size and weight, and number of points, but no tally of the years.

Dr. Hornaday kept an elk's calendar one year at the New York Zoölogical Park to answer the oft-repeated questions; and, to make the doubters believe that the elk sheds his antlers every spring and gets another set, he had photographs taken of various stages of the performance. The biggest elk in the herd was the subject chosen. Here are the main dates, and their record:

March 21. Antlers dropped, one nine hours after the other. They break off flush with the horny base, and leave a raw spot. This, a few days later, is a pad of thick skin, full of swollen blood-vessels. It rises into a dome shape, with surprising quickness.

April 8. Each budding antler looks like a big brown tomato. Now a lump appears on the base of each, in front — the "brow tine" is started.

April 18. New antlers about five inches long, thick and stumpy. A second pair of knobs start above the first pair.

April 30. Each antler now three-branched. Now the stag is most cautious in his movements, for the antlers are soft masses of hot blood-vessels, and a touch would warp their growth.



*Copyright, 1896, by A. G. Wallihan*  
A group of mule deer, suddenly aware of danger



*Copyright, 1896, by A. G. Wallihan*  
The prong-horned antelopes signalling to others with their  
cushion-like rump-patches





*Copyright, 1899, by A. G. Wallihan.*

The American elk is the largest and finest of all the round-horned deer



On this date a fawn was born and hidden by its mother in the rocks, among which it lies like a dead thing, instinctively fearing to be discovered and injured. The mother goes to suckle it often; then goes away.

May 10. Winter coat of elk shedding. They all look very shabby.

June 1. Shedding half finished.

June 18. Antlers now full length but club-like, well-haired; tips flat. Shedding of coat finished.

July 20. Antlers now sharp at tips.

August 1. Velvet still on antlers.

August 15. Elk begins to rub antlers on trees to remove velvet.

August 22. Antlers almost clean. Tips white, bases bloody. Velvet still hangs on in strings.

September 15. Shedding complete.

October 1. Herd in best condition. Antlers clean. Coats thick, glossy, rich colour. Fawns playful. Bulls in fighting mood, "bugle" like a locomotive's scream, ending in loud howl.

A stag, with new antlers, is a dangerous animal. It is well for the fawns that they are nimble and quick-eyed to keep out of their father's way, and miss the quick thrusts of

his horns. And well for all concerned that while the cows were occupied with their helpless young, the stags were as busy taking care of their horns, quite as much weakened by this great drain upon their strength as the cows in caring for their fawns. Nature seems to have arranged things just so, in the family life of the elk.

## THE MOOSE

EVERY autumn, thousands of sportsmen go to Maine and New Brunswick to hunt and fish, and live the life of primitive man, which restores tired nerves and brain better than any medicine. The moose is the largest of all living deer. For this reason, moose hunting is one of the favourite kinds of sport in the Northern woods. It is not confined to the northeastern corner of the country either, for the range of this great animal stretches across British North America, and broadens till it reaches Alaska and the Bering Sea.

A moose loves the water. He feeds upon the roots and fleshy pads of water-lilies that grow along the shores of lakes and streams. Autumn brings the open season, when hunters are permitted to shoot moose. You will find them going in canoes to places where the game is likely to feed. They overtake them swimming. Or they decoy the bull moose to close range by imitating the call of the cow.

A little trumpet, made out of a birch branch,

in the hands of a skilful guide, is a wonderful instrument. It utters a long, low, mournful "Moo-waugh'-yuh," softly the first time, for there may be a big moose close by that will answer it by a sudden plunge that upsets the canoe. After a wait of ten or fifteen minutes, a second call, a trifle stronger, may follow. It falls softly on the silent woods, for it is night. If there is no wind, the sound carries far. So keen is the hearing of the moose, he may hear it and follow, yet be a long time in coming up with the sound. If the wind is toward him, the shrewd animal knows that man, his enemy, is there, and he goes in the opposite direction.

If luck is with the hunter, the guide hears the great lumbering animal coming toward them through the woods. The crashing undergrowth tells where and how near he is, and at length the form of the giant appears on the edge of the water, distinct, and overwhelming in size. Even an old hunter is thrilled at the bigness of a moose that rears his frame suddenly out of the gloom of the forest. A wide spreading, massive crown of flattened spikes his antlers form; the long head tapers to the pendulous muzzle, the shaggy dark hair adds size to the thick, short neck and height to the high shoulders.

The answer of the bull moose is a short one, "Oh-ah!" to the call of the cow. "Moo-waugh'-yuh" is said by some hunters to be "Who *are* you?" Coming down to the shore to answer, the giant becomes a target for the hunter's bullet. A splendid head of antlers may be the trophy of the evening's adventure.

Under the throat of a moose hangs a long, or short, tail-like appendage called the "bell." Nobody knows its use to the animal. All moose wear it, and it seems to be merely a fold of the skin, round or flat, and hairy on the outside. The longest one measured by Mr. Seton was thirty-eight inches, and was worn by a cow.

Splendid as his antlers are, and huge his size, the moose is as far from beautiful as any member of his family. Long ears and flabby muzzle, he looks like a caricature of Bottom, the weaver, in his donkey's head. The fore legs are set under the middle of the body, the head slanting upward like a giraffe's in one direction, the body tapering backward and downward in the other. The large and strong front legs are used to defend their owner in that helpless half-year, from January to July, after the antlers fall, and until the new pair is mature. The cow uses her fore

feet always as weapons of defense, for she has no horns.

In colour, moose are almost black on the body, brown on head and neck, pale gray on legs below the knees, and white on the belly. The calves are red-brown, and not spotted. Two is the usual number, born in April, and they are up and about with their mothers after a few days of lying hidden in the comfortable nest.

The shyness of the moose keeps them well to the wildest parts of the swampy woods in winter. They "yard" together, by families, trampling the snow by a maze of intercrossing paths, in which, by pawing, they can get at the branches of low trees and underbrush on which they must depend when ice covers the water plants and boggy grass they love in summer.

Sometimes so many flock together in one yard that the supply of food gives out, and new paths must be trampled down in the drifted woods, and new yards established where the snow is less deep. In these enforced moving times the moose sees the hardest luck of the year. Sometimes it is a hunting party in the neighbourhood, or trappers whose presence the moose get by their keen sense of smell.

When the men come upon the yard they find it deserted.

In gait the moose is rapid but ungainly. He swings along at a trot, and when obliged to hurry, takes longer steps, setting his front feet close, and spreading the hind ones to straddle the front ones as they pass them. His heavy cloven hoofs make a great deal of noise, as do his antlers, laid back against his neck, but raking the branches, for all that, as the beast plunges along, never jumping nor breaking into a gallop.

Baby moose are very tame and unsuspicious. They treat dogs and men with a familiarity that shows confidence, curiosity and ignorance. A gang of section hands came upon one that had strayed on to the tracks. It hurried up to the hand-car, and followed the men so closely that it was in their way, as they were setting new ties in place. When they were ready to leave, the calf tried to follow, and would have done so had they not put it over the fence. It watched them reproachfully for a while, then trotted into the forest.

The torment of a moose's life in summer is the pest of insects. Its choicest food is the succulent water plants. Rising out of the deep water, a feeding moose will fill his lungs,



as he swims about a little while, then, with a tremendous splash, go down to the bottom, where he will stay for as much as a full minute at a time, before reappearing. No doubt the hours spent in the water are the only ones free from mosquitoes and midges and flies. In the woods, the striped maple is his favourite forage. This has tender shoots and sweet sap. By its stripped stems the hunter tracks the moose through the forest. It is called "moosewood" for the best of reasons. The animal "rides down" also small trees of birch, hemlock, spruce, and willow and strips the limbs by using its teeth and the long, prehensile upper lip. Bark is chiselled off of big limbs by the cutting teeth on the front of the lower jaw. When it eats grass, a moose must kneel. In this attitude it gets mosses on the barrens of northern Canada and Alaska.

Our moose is the "elk" of northern Europe. It belongs to an ancient branch of the deer family, now extinct but for this species, which is the giant of its race. Careful measurements by a truthful scientist give seven feet at the shoulder as the height of the largest moose killed in New Brunswick. The Alaskan moose is a larger animal. So a bull moose is considerably bigger than a horse.

Tame moose are well behaved, and are used as reindeer are in some parts of the Far North. In menageries they do not seem to thrive after they reach good size, probably because they get too little exercise when they get the coarse food on which they thrive best.

Laws for the protection of game protect moose in the hunting grounds of the Northeast. Much more freedom in Alaska has made the animals scarce there. It will be necessary to have game wardens there to keep all the wild creatures from complete destruction. This the governments of Canada and the United States will do, more and more, as the people realize the value of keeping hunting grounds stocked with game as playgrounds for the people.

## THE WHITE-TAILED DEER

**I**N THE woods about the settlement at Jamestown the first English colonists caught their first glimpses of a deer that reminded them of the native deer of England. It was a light-footed, graceful creature, whose great dark eyes, circled with white, looked larger and brighter than eyes could be in so small a head. The body, grayish-brown in colour, nearly white on the under parts, would never have attracted attention, among the gray tree trunks, except that the deer held erect a long, bushy tail, black, with a wide white border. This flag waved behind his antlered head, when the deer faced the approaching stranger. But soon he turned and fled from the unknown presence, and the upright tail showed as a pure white plume, above a white pointed flank patch on each side. This striking flash of white was the target of many a hunter from that early day to this. The fleetness of the deer was his salvation. The marksmanship of the colonists improved with

the fascinating sport of hunting the white-tailed deer. But the deer were not exterminated.

In August the even, reddish-chestnut coat of summer is replaced by one of a beautifully mottled grayish-brown, that is worn until the following May. The fawns, born in May, are bright chestnut or yellowish-bay, mottled with white spots.

At birth the fawn is about fifteen inches high and weighs less than five pounds. When full grown, an Adirondack buck will stand three feet high, measure six feet in length, and weigh about two hundred and fifty pounds. In Maine and in the Adirondacks this deer is much above the size of the form that the early colonists knew.

The first names of many American plants and animals bear the name of the region from whence the first specimens came. For this reason, the white-tailed deer was called the Virginia deer. The settlement of New England, then the gradual westward movement of the pioneers, showed that wherever there were oak forests, there were white-tailed deer, and plenty of them.

All the way from the limit of tree growth on the north to the Gulf of Mexico, and west to the Rockies and Texas, this deer abounded.

Venison was the meat which the frontiersman supplied to his family. The destruction of the forests, to make room for fields of grain, made the deer leave the Central states, except where extensive woodlands remain along the bluffy river banks. But in wilder regions, instead of becoming extinct the white-tails held their own in spite of hunters and scattered settlements. Laws protecting them have increased their number in many states, notably in New England. A short period each year for deer-shooting brings thousands of sportsmen into Maine, where they pay a license fee and hunt with a licensed guide. It is estimated that a million dollars a year is about the amount the state receives from vacation seekers of all kinds, and fifteen thousand to twenty thousand deer are annually shot; yet the number of them constantly increases. They are a valuable natural crop, bringing in an increasing income, without expense, except the proper enforcement of game laws.

The white-tailed deer's habits of life are most interesting. They explain why a white-tail family may live in comfort in a very small patch of timber, yet gunners all around them not know of their presence. They are lovers of the half-light. In twilight and early dawn

they are out, feeding, and they love moonlit nights for visits to the farmers' grain fields. They slip like ghosts through the shadowy wood paths, go under wire fences, or leap over close board ones. They crop the foliage of overhanging trees, eat greedily of clover and timothy grass, dote on the various small grain crops, turnips and garden vegetables. In marshy ground and ponds they drink deeply once a day, and find tempting food in the fleshy roots, leaves, and stalks of lilies, and other plants. The weaned fawns go with their mothers in these excursions for food and water, learning to leap fences, swim, and, most important, to lie low among the dead leaves to avoid being seen if an enemy appears.

September brings back the bucks, splendid in their new antlers and the family feast together, while they shed their summer coats. Acorns they prefer to any other wild fruit. They grow fat and sleek before winter comes, and it is then that the hunter delights to go deer-stalking.

The white-tail is keen of ear and nose, but his eyes are not so good. He doesn't stop to inquire its cause, as an elk would, or a mule deer, when he hears the crack of a twig in a woodland trail. His plan is to escape in the

opposite direction from the sound. It is a hard matter to get within shooting distance of one of these suspicious creatures. Many a hunter has followed his trail for hours only to see the white signal of his own defeat, the tail of the fast disappearing deer, that has at last scented or heard him, in spite of all his precautions. It is a fair and fascinating game, deer-stalking. The easier, surer methods of hounding and fire-fighting are not fair to the deer. But to get a fat white-tail buck by stalking is a credit to the hunter's skill.

The trophy of a pair of fine antlers is worth more to the true sportsman than two hundred pounds of venison. The older the buck, the finer and larger the crown he wears. The beam of an antler grows upward from the head, then suddenly turns forward, bearing three vertical, sharp tines, of almost equal size. These are quite unlike the antlers of other deer. With added years, the number of tines increases.

The shedding of a deer's antlers has been described for the elk. It is a painless process, for they are dead. But the new ones are very much alive and sensitive, even when their owner rubs off the velvet. The white-tail endures the pain for the satisfaction of



polishing their sharp points, and using them in combats that test the valour of rival challengers.

Among these deer the accidental locking of horns often results in the death of both. The successful fighter is fierce and revengeful, battering his victim until it has ceased to show signs of life. Indeed, men, attacked by pet deer of this species, know that to lie still is often the only chance to escape alive from the infuriated animal.

The buck has need of all his strength and skill to defend his chosen does and their fawns of the year from wolves and cougars and lynxes, in the North where the snows are so deep that they have difficulty in getting about. Their small hoofs cut through the drifts, while the spreading, padded feet of their enemies act as snowshoes. Because these wild enemies are scarce, the deer are becoming more abundant close to many settled communities, and entering regions where they have never been known before.

“Yarding” is the winter habit of this deer, as it is of the moose.

## THE MULE DEER

**W**HEN J. J. Audubon and his companions explored the upper course of the Missouri River, seventy-five years ago, they saw for the first time a handsome deer, darker in colour than the white-tail, more heavily built and taller, but with shorter legs, and larger, very different, antlers. Each one branches into two prongs, which divide again, so that a big Y carries two small Y's. These antlers stand so high that the deer looks almost as stately as an elk. The great ears give it its name. The tail is white with a black tip.

In summer the mule deer is yellowish or brownish-gray; in winter it is gray. Its range stretches from the Bad Lands of Dakota south to Texas and west to the coast plains. It loves the rocky foothills, and in summer climbs up to the high plateaus and browses along the mountain streams.

The mule deer's gait is peculiar. It goes off by a series of bounds, the four legs stiff, and the hoofs all striking the ground together

between jumps. This is not quite as rapid a gait as the easy springs of the white-tailed deer, and it is more exhausting. But the animal is able to go up the broken steps by a series of these jumps where dogs are not able to follow.

The mule deer crops the tender shoots of poplars and willows along water courses, and is fond of new grass. But just as readily does it eat the pungent sage brush in drier ground. Enthusiasts declare that its meat is better than any other venison, and the skin makes the finest buckskin. Unfortunately, its curiosity leads this deer to look back when disturbed. This gives the hunter the few seconds needed for a shot. Though fawns are born, two or three at a time, the species is dying out. The wild regions where they live cannot be guarded by protective laws. These deer are not able to stand the conditions of life in a Zoo. So but rarely can they be seen in captivity. The finest specimens live in the Rockies, from Colorado northward. The one opportunity to see one came to me in the Big Horn Mountains in Wyoming. I remember with what a thrill of pleasure I saw the noble creature bound away unhurt, while the hunter scolded us all for his missing so good a shot.

The name "black-tail" is not a proper one for the mule deer, though it is in use. Only the tip of the white tail is black. The Columbian black-tailed deer of British Columbia, Washington, and Oregon has a full right to the name, for its tail is black above. The Californian and the Sitkan black-tails are near relatives.

## REINDEER AND CARIBOU

THE American reindeer is called caribou. He is represented by two races and several different species, for the country covered by caribou is four thousand miles long and more than half as wide.

The *woodland caribou* is the larger. He lives as far north as trees grow. The other race inhabits the treeless wastes. These are smaller, *barren-ground caribou*. Two large hoofs in front, two smaller ones behind, are loosely joined to form the foot of this animal. A strange click or creak sounds as the foot is lifted and set down. It is in the joint, and is not made by the horny nails outside. The weight of the body makes the foot spread out till it is about four inches wide and seven inches long. The caribou's foot is wonderful. The pad or "frog" shrinks away from the sharp rims in winter, and the animal goes sharp-shod over the ice, and has no fear of slipping. On fields of snow he does not sink, because each foot spreads into a big snowshoe at every step he takes.

On a long slope the caribou lets go of himself and slides. If there is a lake at the bottom he is pleased, for nothing is more fun to a caribou than a long swim. The broad feet are perfect paddles, and the long legs give a long stroke. The fur floats the body, for each hair is a hollow, air-inflated life-preserver.

Never was animal better protected for life in the frozen North. A layer of fat under the tough hide, a dense coat of oily wool outside, and then the mat of long hair, each one air-filled, and so a perfect non-conductor of the body's heat.

For defense the caribou has his antlers until they fall off. In this family the does also are armed, though her antlers are smaller and simpler in pattern than those the male wears. The caribou's crown is like that of the elk and the moose. There is a round beam and six broad, flattened "shovels" of several points on a typical antler. The "armchair" form is worn by the barren-ground caribou, the extra long, round beam of each antler curving backward, then rising and pointing its tines ahead, while two broad, short-stemmed "shovels" go straight forward over the face. The woodland caribou antler has a

shorter beam, and more points on its flattened shovels.

The white neck, forehead, and belly contrast sharply with the woodland caribou's grayish-brown back, and darker face and legs. He matches the brown October woods and fades with the coming of spring. The barren-ground caribou is grayish-brown to match the dull, moss-covered plains, and, when snow covers the ground, he is almost white.

The strangest thing in the life of the caribou is the drifting of herds from one place to another. They mass together as the buffalo did on the Western plains in the early part of the nineteenth century. A hunter, who was in the North as the winter of 1889 came on, saw these migrating herds from his camp. He calls it one of the most remarkable things he ever saw among American big game. Scattered bands of caribou had been seen for days moving southward. But early one morning a boy rushed into camp shouting, "*La foule! La foule!*" which is the French-Canadian word for "crowd," but used for this particular multitude. The grunting of thousands of caribou, with the creaking and clattering of four times as many hoofs on the icy ground, made a murmur as of continuous,



distant thunder. For six days they came on, in groups or solid ranks as regiments of soldiers, and nobody tried to estimate their numbers. It was of no use. These were the barren-ground caribou faring south, because snow covered their summer pasturage, the moss on the dry tundras. They were bound for the lichen-draped trees, their winter feeding ground. Instinctively they followed the lines of longitude toward the belt of tree growth. They do not turn aside for water, being expert swimmers and sure-footed travellers on the smoothest ice.

The winter sends the woodland caribou, too, drifting farther south; spring turns the tide northward. The swarms of insects often drive them into open country, out of wooded, boggy ground. They often go long distances, as if aimlessly hopeful of finding better feeding grounds farther on. The gait is a long, swinging stride, breaking at times into a trot. Endurance, rather than speed, accounts for the long migrations of the caribou. The calf, born in June, is able to follow the mother the same day. By September it is weaned and looking out for itself.

## REINDEER FOR ALASKA AND LABRADOR

**D**ONNER and Blitzen, hitched to the sleigh of Saint Nick, and the others in that famous team, have given people, young and old, their ideas of how a reindeer looks. This wonderful animal of the bleak North lives on all continents. The Asiatic and European reindeer were probably the first beasts of burden. In the Northern half of our continent our reindeer are called caribou. There is the small, barren-ground caribou, and the larger woodland caribou. They have not been tamed and taught to work by the Esquimaux and Indians who live in the Far North. And it is doubtful if they ever will be. They are useful as food; their furry coats and tough hides furnish material for clothing; their horns, sinews, and bones serve various purposes. But dogs drag the sledges.

Some years ago domesticated reindeer from Lapland and Norway were brought into Alaska, and a herd established there, to see if the

change of place and food could be safely made. The animals seemed to do well in the new surroundings. The experiment was a success. The Government is extending the work, spending \$25,000 yearly in it. There are 20,000 reindeer in Alaska, those born in that country being larger and stronger than their parents. The breeding station at Unalaska and substations at various missions have charge of the work. The Esquimaux like to handle the animals, train them to sledges, and care for the herds. The regions almost destitute of seal, walrus, and caribou will soon have the reindeer to rely upon for meat and fur as well as for hauling sledges.

Doctor Grenfell brought a herd of two hundred and fifty Lapland reindeer to St. Anthony a few years ago. One hundred and fifty fawns were born the first year and all but one of them lived. An experienced overseer, skilled in the care of these animals, had charge of the herd, with two Lapp herdsmen to help him. They were surprised to find the reindeer moss so much more abundant and luxuriant in growth in Labrador than in Lapland. In summer the animals browse upon birch and other trees, in winter upon the lichens that coat the branches, where the moss is snowed under.

The St. Anthony reindeer are carefully rounded up each morning by the Lapp herds-men. If none is missing or ailing, they are turned out till the next day. The overseer treats any sick ones, and usually puts them on their feet again. In Lapland, where reindeer are common cattle, medical attention is not given them. But in Labrador they are expensive imported animals and treated with the care they deserve. The reindeer in Labrador and in Alaska have come to stay and to be a blessing to the people who live in those cold and barren regions.

## THE ZOO GIRAFFES

**R**OMEO and Juliet are their names. They are not graceful animals, but they have points of beauty, many of them, and no visitor to the Zoo goes away, willingly, without seeing these wonderful African relatives of the deer and antelope.

Romeo is taller than Juliet. He was born in 1901. At three years of age he was eleven feet high. At five years he was close to thirteen feet. At seven years he stood fourteen feet high; and now, at the age of ten years, he is approaching the fifteen foot mark.

A partition fence parts Romeo's yard from Juliet's, but they rise superior to such obstructions, and rub noses in friendly fashion between the period of leisurely grazing and browsing. They are evidently contented, and the people who watch them never seem to disturb their calmness. The keeper is their friend, and when he comes into the enclosure it is always to do something for their comfort, and they do not kick nor bite him, as some fearful persons



This is the natural way for Juliet, the three-horned Nubian giraffe, to get her dinner





Romeo, having browsed the lower branches all off of his elm tree, has to take to grass.  
He is not built for grazing



always expect them to do. They often kiss him instead, and they obey promptly, when he tells them that it is sundown and time to go into the house. He will give them some forage biscuits before he locks their door for the night, and these they like. There is fresh water in their trough and good hay in the basket hung high up on the wall. Rock salt and a little bran are given as needed, and fresh raw vegetables, cut in bits, they greatly like.

In the outside pen of Romeo stands a fine elm but the branches are too high for him to reach. The trunk is protected by wire netting. If Romeo wants something to eat, he spreads his long fore legs wide apart, lowers his head, and nips off the grass, while people look on, laughing and wondering at his remarkable attitude. Evidently Nature did not intend giraffes for grazing.

In the next enclosure, Juliet is showing how giraffes feed in their native countries. A big linden tree shades her from the hot sun. This tree has its trunk wound with wire netting. Ten feet or more from the ground the lower limbs are all dead, bare stubs, without twigs. They have been killed by Juliet's browsing. Now everything green is quite above her reach as she stands with fore-feet on the ground.

All she can do comfortably now is to gnaw the stubs, and get a little of the sweet sap and soft bark.

But if you watch a while you may see her lift her fore feet on to a block, or place them against the fence so as to catch the wire mesh with her hoofs. So she rears up, her head among the dead branches, her nose pointed upward. Now her long tongue goes out, making her taller still by several inches, and you see the tip of it curl back, forming a hook that brings down a leafy twig, and before her foothold gives away she has nipped off the juicy morsel, and she chews it for a long time with evident satisfaction. Romeo looks on with friendly interest, but his elm offers no such opportunity. He must go to his elevated basket for a wisp of dry hay, or sprawl in an absurd attitude, if he wants green grass. It is always fun to see what he will do.

No animal browses as high as the giraffe. His long fore legs, long neck, and long tongue give him a reach that no other animal of the present age can equal. His figure is most peculiar. The hind legs are short, the line of his back slants at such an angle that nobody could ride on his back. From his head to his heels is a very steep toboggan slide.

When a herd of giraffes is sighted in the broken, sparsely wooded country of East Africa, the hunter cannot hope to stalk them unseen, for the keen eyes from their elevated stations can see all that goes on. But so unsuspecting are they that a hunter who goes toward them on a slightly deflected course is able to get fairly close before the giraffes move on. At first, if the men avoid noise and move quickly, the animals go off at a swinging walk awkward to see. If the men give chase the walk changes to a canter, in which the hind feet are spread apart, so as to straddle the front ones when they strike the ground. At this gait, a horse can hardly keep up with a giraffe.

The two sharp horns, standing high between the long ears, are supplemented by a ridge-like third horn, broad-based and flattened in the middle of the forehead. The head tapers delicately to the round nostrils beyond which the upper lip extends like a thick, rounded, fuzzy pad. The eyes are dark, prominent, and very beautiful.

The coat of the giraffe is curiously blotched with irregular patches of tan, separated by lines of white. The hair is short and lies close. The colour is darkest above, paler and less

distinct in pattern beneath. The tail ends in a dark switch of hair that reaches to the ground. A short, erect mane adorns the long neck. The big knees are calloused, by kneeling, I suppose.

Not all giraffes are like Romeo and Juliet. They are of the Nubian, three-horned species. There is a five-horned species, possibly a subspecies, and a two-horned species farther south. The best known kind is the three-horned giraffe. Unhappily hunters are destroying the herds of these very interesting and inoffensive animals, whose present scarcity is a prophecy of their extinction.

## THE PRONG-HORNED ANTELOPE

**I**N THE best zoölogical gardens of this country a beautiful creature can be seen, whose traits seem to relate it to deer on one hand and cattle on the other. It is the antelope which early explorers and settlers west of the Missouri River found in great droves that swept, when startled, like a whirlwind over the open plains. Now those antelope herds have dwindled to a pitiful remnant, and would be extinct, except for state laws that absolutely forbid the shooting of them in most of the states where they still linger.

The scientist is especially interested in preserving the prong-buck, because he is the sole representative of his family. The deer family has the moose and caribou, besides the deer. It has nearly fifty species, inhabiting all the great continents; about half of them live in America, including the elk and moose, which are the giants of the family.

No other country has the prong-buck, nor any member of his family. He is alone, and

lives only in the wilds of our mountainous Western states.

The horns are short, curved at tip, and a prong rises from the base of each and curves out directly over the eyes. They are shed every year, but when they come off they leave a bony core, with the new horn well started upon it. So they are hollow, like horns of cattle. The does have small spike horns. The feet have two hoofs, like the giraffe, and no "dew-claws"; the hair is pithy and harsh, over an under layer of wool. A short mane grows on the neck, and patches of long hair on the rump are erected at the animal's will, as a hog's bristles are, when he is angry.

The antelope is dull yellowish, with brown trimmings above and white below. A black-banded collar encircles his neck. The rump patches are white. The yellow sands and alkali plains of the "Great American Desert" favoured the antelope. He faded into the landscape when he stood still. Keen as are his eyes, he must often have failed to make out members of his own family, or herd, except for special signals.

Try to see the Zoo antelopes use their signal system. They are at their dinner of clover hay, and the hair of the rump lies flat. The

disks are closed. A dog suddenly comes up. Instantly the alert creature lifts its head, and all the long, white hair on the two rumps stands on end. A big white cushion suddenly and mysteriously appears, and out of the midst of it a peculiar, musky odour is exhaled. All the rest of the herd do as the first prong-buck has done, but they may not move from their tracks nor utter a sound — merely stand at attention — while the dog trots off.

In the open country, antelope flash these signals, and throw out the pungent scent to let scattered members of the herd know what is going on. If an enemy approaches, the signals are exchanged and the herd bunches together, wheels in the safest direction, and runs, galloping by long leaps, with heads low. At times the animal goes by stiff-legged bounds, like the mule deer, its head high. It is the swiftest of all runners on our continent.

But the white rump patch is a target for the long-range rifle, and hunters succeed too well. It does the antelope more harm than good in the run for his life.

When at bay, or defending her kids, the antelope strikes a terrible blow with both front feet. It will kill a small wolf, and cut



a rattlesnake to pieces. The horns are short but they are also good fighting tools.

The kids lie low with heads on the ground, their mottled coats of buff and white blending with the colour of the ground. They can remain motionless a long time, and escape the eye of an enemy that is hunting for them.

September is their happiest month in the year. The young and old gather in companies, to feed and play. In games like tag the kids run in and out among the bushes, their parents often joining in the sport. Many an old hunter has seen these field sports going on, and also noted the signals of alarm given by a sentinel who stood guard on a point of high ground, and did his full duty, no matter how absorbing were the racing contests going on before him.

## WILD COUSINS OF CATTLE

### THE BISON, OR BUFFALO

**T**HE ONLY member of the family of the ox that is native to North America is the bison, more commonly called buffalo. Our grandfathers, if they went west of the Mississippi when they were young men, might have seen, between the great river and the mountains, the herds of buffaloes that moved like a dark mass of some slowly flowing substance over the plains, their forms obscured by distance and by the clouds of dust stirred up by their cup-like cloven hoofs.

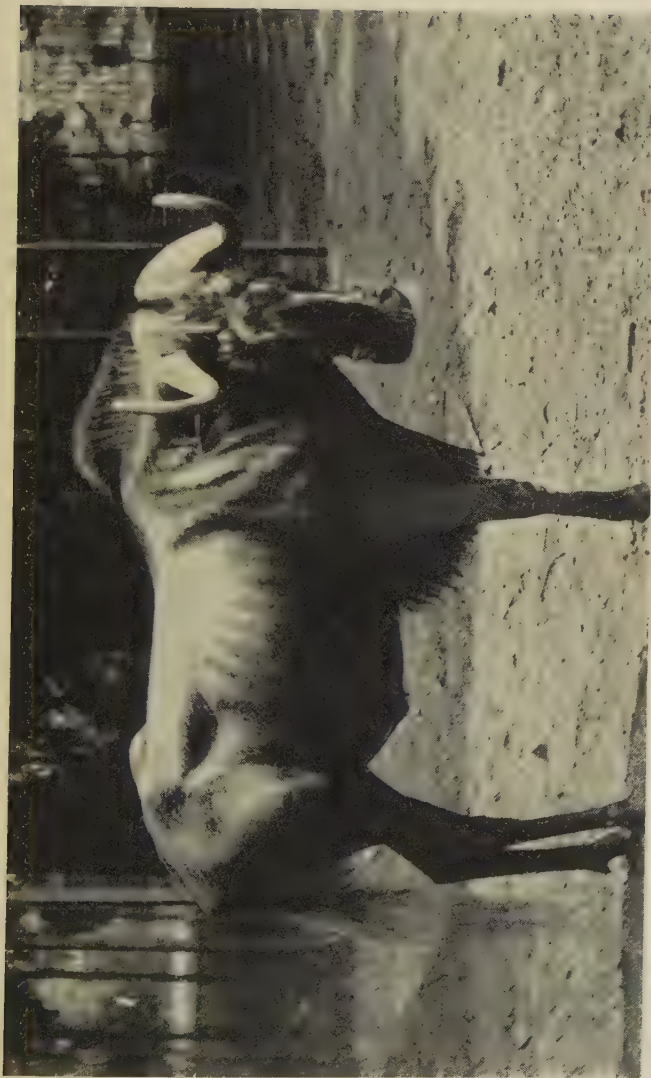
Our fathers, going into the Dakotas or Arkansas a generation later, saw the skulls of buffaloes bleaching by thousands on the open prairies. Indians and settlers had a good many worn "buffalo robes," but the animals were gone. In an astonishingly short time the Indian and the buffalo both disappeared before the white man's advance. The campaign of the buffalo-skin hunters makes a cruel story.

Up in the northern part of Canada along the wooded streams they say that a close relative, the wood buffalo, is still found. These are the remnants of a great population, saved by being so far from people. Even these little bands are now hunted.

The Yellowstone Park had a herd of three hundred wild buffaloes, but they were killed off by poachers until but few remained. These are now protected, and their increase may be counted upon. Private herds are being successfully maintained in a few states. But these pampered animals of zoölogical gardens and private estates have little room to range, and they are very poor specimens, compared with the bison of the prairies. The Indian of the reservation shows much the same contrast with the noble red man who hunted the buffalo.

I need not tell any boy or girl what a buffalo looks like. The shaggy head, the huge shoulders, the hollow, curved horns, the little feet, are all in the picture books, the geographies and the histories that describe Western life and Western scenery during the time the country was being settled, and made into states.

The charging bull was the most majestic creature among American quadrupeds. The



The gnu, called "the horned horse," is a South African antelope



*Copyright, 1905, N. Y. Zoological Society*

This buffalo cow is slowly shedding her heavy winter coat of hair

lowered head, covered with a dark mass of brown hair, was set on a short thick neck whose size was emphasized by the hairy coat which extended over the huge hump shoulders. A luxuriant mass of black hair from chin to knees made the imposing front of the animal's body contrast strikingly with the trim hind quarters, for the hair behind the shoulders was short.

Conscious of his strength, the buffalo would attack a wolf or bear without hesitation, tossing the object of his rage into the air and catching it again on the cruel points of his polished horns. The strength of those shoulder muscles was magnificent. The fore feet struck with tremendous force, for the thin, sharp hoofs were able cutting tools, for defensive use.

The buffalo cow has horns, and her shoulders hump; but she has less shagginess and less strength; she was never so magnificent a creature as the bull.

Buffalo calves are born in spring, and often there are twins. The mother is gentle, calling the calf with a low, grunting noise, never bawling as a cow does. The calf answers in the same muttering tones. The milk is not abundant, but it is very rich.

In case of danger, the calf flattens itself



on the ground, with its neck stretched out, and the mother circles around it, with lowered head, fighting off whatever enemy threatens her baby. In the days of the big buffalo herds, the wolves were their arch-enemies. The cow left the herd before the calf was born, and when a wolf discovered her hiding place, it called others, and they fought her until her strength was exhausted, and she and her offspring both fell victims to their patient, relentless foes.

The calf, a bright mahogany red, looks and acts like any calf. It is defended by its mother, and at times by male members of the herd.

During the summer the buffalo bull used to tear up the dry ground with his sharp horns, paw the earth clods into fine dust, then lie down and roll like a horse, and wallow like a pig, throwing up in jets what he dipped up in his cup-like hoofs. This dust bath drove away the tormenting swarms of flies and gnats.

In the boggy spot he would work for days to deepen and widen a bowl-shaped hollow, and make a thin mud bath for himself. In its cooling depths he rolled and came out with a layer of mud caked on his furry coat. This defended him against insect bites during the summer when shedding left his flanks quite naked for some time.



The comfort of the buffalo was ministered to by flocks of birds. The "buffalo bird" still thrives out West, and hovers over the herds of cattle and elk, as it used to attend the herds of bison in earlier days. The name, "cow black bird," or "cowbird," is the one we know it by. This readily calls to mind the common brown-headed blackbird, whose efforts to sing are so funny to hear and to watch. The insects that follow herds of cattle, tame or wild, furnish these birds their food. The grubs that bore into the tough hide of the animals distress them more than the insects that swarm about. The greatest service the birds can do is to dig out these fat larvæ, against which the big animals are absolutely helpless. Old hunters tell of seeing a dozen or more birds perched, with heads all pointing toward one spot, usually on the high shoulders of the bison, evidently all concerned in the digging out of a single grub or a group of them. When an animal was killed and the hunter was skinning it, the birds came around, as tame as you please, frightened not at all by the man nor by his horse, but eagerly prospecting for the grubs whose presence made lumps in the flesh and holes in the hide.

Listen to the story told by an old-time

hunter, who saw the great buffalo herds that surged over the plains of Montana and Wyoming sixty years ago:

“When a blizzard came up a buffalo was in his element, for when the dust-like snow was driven into his close suit of hairy fur, he shook himself much as a horse does, to keep himself in good condition to weather the storm. Always on the alert, if alarmed he would face a driving blizzard on a keen run, and when all was quiet would go to feeding, and root up the deep, frozen snow with his powerful nose, leaving it in ridges at times, as if turned over by a plough. Nature had given them a fine sense for getting water, an instinct for stamping open frozen springs and lakes in the long, cold winter months. They did not suffer for water as cattle now do on the same range. When hotly pursued in the running hunt, a bull would leap off a high river bank to the water twenty-five feet below, and there give a fine exhibition of his wonderful swimming powers. I saw one do this, and at the other side plough his way through a low-lying river beach of quicksand and mud that a goose would not care to roost upon. At times his face, only, appeared out of the thin mud. Riding among the Indian hunters,

I demanded that they give him his life as a brave. And when they caught the spint of my demand, they joined in the chorus of yells to encourage him. Right glad I was to see success and safety crown the persistence which carried him through this desperate run for his life. From the quicksands he climbed the high bad land bluffs without any apparent exhaustion of his wonderful strength."

A hunter saw from his camp one day what appeared to be a human head, showing occasionally above the bank that rose on the opposite side of the river. With his glass he made out that it was a bear, watching the trail that ran below his station on the bluff. Pretty soon a pair of bison came down to drink. The cow was in front. The bear sprang upon her, and tried to drag her down. The bull, who was a little distance behind, charged as the cow swung around and gave him a chance. He caught the bear on his horns, and tossed him into the air. As he came down, he was caught and thrown up again. When he fell this time, he was so badly torn that he could only drag himself off to die.

The passing of the buffalo was a feature of the opening of the fertile land of this country

to cultivation. The development of any region drives out any inhabitants who use the land wastefully, as the Indians and buffalo did. They departed together. Civilization has no other way of solving such problems. We regret the cruelty that marked the change, but know that the new order had to replace the old.

## THE BIGHORN AND MOUNTAIN GOAT

THE massive horns of this mountain sheep of the high Rockies, and his wonderful skill and daring in getting about over perilous crags, has led hunters to exaggerate. The truth is wonderful enough. But to say that the bighorn deliberately drops off a ledge and lands, without harm, *on his head*, hundreds of feet below, is to state what is untrue and absurd. No reasonable person can believe it. The horns would not be damaged, but what would the impact of such a fall do to the delicate brains? They would be utterly shattered and the neck would be broken.

The most wonderful thing the bighorn does is to keep fat and contented, above the tree line, on slopes covered much of the year with snow. In the summer there are flowers and grass in profusion in the hollows. After snow covers these, the animal paws down into the drifts, and still finds sufficient provender for his needs. He never goes to the lower levels in winter. His range is the grassy belt be-

tween the tree line and the limits of perpetual snow.

The finest trophy a hunter can get is the head of a bighorn ram. To shoot this wary animal he must follow him with the utmost caution, and take many chances of breaking his own neck. The sheep are sure-footed, and they run at lightning speed along narrow paths on the edges of precipices where the hunter dares not follow. Indeed it makes his head swim to see such feats accomplished. The sheep bounds along fearlessly, and looks down complacently upon the hunter toiling up the slopes, and at a safe distance. To shoot such elusive, tantalizing game is the highest art of the sportsman.

The unbranched horns curve backward from above the eyes. The ear is near the centre of the incomplete circle formed by the forward-pointing tip of each horn which is angular, ridged, and very massive at base. Fourteen inches around the base of the horn is a big specimen. It will measure forty or fifty inches in length, along the outer curve. This is the dauntless front that makes the hungry wolves and cougars hesitate to meet a bighorn in a fair fight.

Several related mountain sheep are scattered from the Arctic Circle to Mexico, but

they are extremely rare and not well known. Evidently immigrants from the central regions of Asia, the home of wild sheep, moved north-east to Kamschatka, crossed the ice at Bering Strait, and came gradually down the Rockies. It took time to colonize such remote regions, but there is time enough. Animals have gradually scattered from their original homes. So have the races of men. The same thing is going on now.

The Rocky Mountain goat, long-haired, slim-horned, with a patriarchal beard that seems to justify his name, is a near relative of the chamois and the gnu and other true antelopes. He is distinguished as the only pure white cud-chewer. He lives among glaciers, high above the range of the bighorn, where hunters rarely trouble him. He blends with his snowy background and gets his living, nobody knows how. Yet he is in good flesh and faces life with a calm and steadfast gaze.

In the Zoo the white goats are equally content, and in excellent health. They climb over their house roof, possibly dreaming of the icy precipices they once scaled with equal safety. (See page 283.)



## THE ODD-TOED GROUP OF HOOFED MAMMALS

### WILD COUSINS OF THE HORSE

**T**HE race horse is the fleetest animal that runs. He has come down from five-toed ancestors, gradually abandoning one digit at a time, until now he walks on the nail of his one remaining toe. A broad, many-toed foot is good for bogs, but the wild horse has chosen to live on dry, solid ground, where speed has been developed. The bones of his wild ancestors, with their feet of various patterns have been preserved in the rocks. Go to the American Museum of Natural History in New York, and join the crowd of eager people who are looking at the skeletons and models of these prehistoric horses — the American progenitors of the race.

We have no wild horses in America now. In Asia there are wild ones still. The Prjevalsky horses are in the New York Zoo. Their parents were captured by wild Khirgiz horsemen in

Western Mongolia. They are ponies with short, erect manes and no long forelocks. Their tails are short-haired like a mule's above, horse-like below, with a long brush that sweeps the ground. A dark stripe runs from head to tail down the spine, the legs, mane, and tail are darker than the brownish-gray body colour. They are strangers to us, but obviously horses. Nobody can doubt this.

The wild asses of Asia are the parents of the donkey, which is the beast of burden in European and other countries. The Persian ass at the Zoo has a dark stripe down the spine, faint crossbars on the legs and plain tan sides. Its ears are long, and as hay time draws near it lays them back, extends its nose, and utters a high, falsetto bray that is as funny as the cowbird's effort to sing. It is painful to hear so large an effort fizzle out in a cracked, squeaky voice.

Over in another yard the zebras utter their barking neigh, for they, too, smell hay. "Ba-wa-wa!" is what they say. The most glaring stripes mark their bodies, in patterns clearer than the tiger's. Round-bodied, plump, trim little horses, with close, short hair, and manes erect. The largest species comes from Abyssinia. They are as big as a horse, and these are the most

daintily striped. The smallest is the mountain zebra from South Africa and this one wears the heaviest stripes. These "jail-bird" horses always attract attention in the Zoo. What joy must it be to explorers to see thousands of them together, grazing on the plains of Africa, keeping company with the mottled giraffes, which browse the trees over their heads!

The "wildebeeste," or gnu, goes by the popular name of "the horned horse" in menageries. His horse-like traits are many, but he is an antelope. Look at the strange-looking muzzle. Count the characteristics that place him in the company of the oryx at the Zoo. Read about him in tales of hunters returned from Africa.

## THE BLACK RHINOCEROS AND ITS WHITE COUSIN

**N**EXT to the elephant, in shoulder height, stands the rhinoceros. From the African elephant, that stands nearly twelve feet high at the shoulder, and the Indian elephant, a smaller species, the next step down reaches the white rhinoceros, six feet and more in shoulder height, and the black rhinoceros, between five and six feet. These clumsy beasts are longer in proportion to their height than elephants, and they have much shorter legs. But the hippopotamus outclasses them in weight and bulk.

The horn, or the two horns that arm the head of a rhinoceros, are not horns at all, but merely exaggerated warts. They immediately tell us the name of the animal, for no other huge creature wears horns between his eyes, or set in a row down the middle of his face. "Horned snout" is the meaning of his name.

The foot is most interesting. Take a good look at one. It has three broad nails,

like little hoofs, covering the three toes with which the foot is supplied. They are set around a rubbery pad, the sole of the foot. The middle toe has the largest nail, for it corresponds to the middle finger on the human hand, and the same digit is the solitary toe that the horse walks upon, whose nail is the thick, horny hoof.

Let us stand back, now, and take a look at this ungainly beast, broadside. His points of beauty are certainly hard to find.

Rhinoceros, your hide looks all undone,  
You do not take my fancy in the least;  
You have a horn where other brutes have none:  
Rhinoceros, you are an ugly beast.

The hide that encloses this bulky body looks many sizes too big. It is made of irregular thickened plates that lie flat, and thinner, flexible tracts that lie in folds, and give the creature some freedom of motion. Savage tribes in some parts of Africa prize the hide of a rhinoceros, because they can get fifteen to twenty shields out of a single skin, using the thick portion only, and the thin sections are useful in other ways. No arrow can pierce one of these shields.

Ugly as the huge body is, the heavy, low-

hung, concave head, with its vicious-looking horns, small, pig-like eyes, and wobbling, cornucopia-like ears, is the least attractive part of the beast. Ugly, unintelligent brute-strength is the means by which this creature makes his way through the world. The massive shoulders suggest that terrible work can be done by the horns, when the animal can reach the object of his anger. The only amusing feature is the long, thin tail, tufted at the end, and switched from side to side when the animal is labouring under any excitement; held aloft when charging, or escaping from hunters.

The black rhinoceros has a sharp-pointed, horny-tipped upper lip that is flexible and extensible, and is used as a grasping organ. The white rhinoceros has a broad, squared snout, with no sign of a proboscis. It eats grass only. The black species is a browsing animal. The hook-like tip of the upper lip is in constant use, pulling down the branches of the thorny acacias, and cactus-like euphorbias that are abundant on the dry uplands. It does not graze, but lives entirely on the stems, roots, and foliage of shrubby undergrowth, which it grinds between the ridged cheek teeth, after tearing them up (or down)

by the use of the horns and horny lip, assisted by the cutting teeth. A group of feeding rhinos make a loud, champing noise, which tells their whereabouts in the dead of night. They feed by day, also, if the weather is wet, and the pasturage scant. It is their preference, however, to sleep by day hidden in thick patches of jungle grass or thickets of thorn-bush.

The white rhinoceros is oftener seen in museums than in menageries, for these animals are rare now in the regions where not fifty years ago hunters found them in great numbers. The craze for the horns that struck the ivory merchants about thirty years ago turned the attention of traders at the African ports from the elephant to the more timid, more easily captured rhinoceros, and the white ones, being larger animals, were more nearly exterminated than the black ones by the swarms of hunters that went after them.

The white rhinoceros is not white, but gray. It may be paler than the other species, but any individual's colour depends upon the colour of the soil in which he took his last dust bath, or the mud in his last cool wallow. Ticks and other insects establish themselves in crevices of the skin, and pester the great brutes, which have to roll in mud or dust to



get relief. They are like pigs in their evident enjoyment of a wallow.

The best friend the rhino has is the rhinoceros-bird, which stays with him, sleeping and waking, perched on his back, pecking in the crevices in the skin and devouring the ticks and other parasites that make life a burden, by their continual activities. Besides this service, the bird is the rhino's sentinel, his alarm clock. Stupid at all times, and a heavy sleeper, the rhinoceros does not know that danger is near until the bird leaves off its monotonous pecking at insect burrows in his tough hide to flutter, screeching, about his head. This rouses the animal to a sense of danger.

A frightened rhino is likely to do a hunter or his horse harm, if they are at close quarters, and the wind is in his favour. The nostrils are dilated to scent the enemy, and the conical ears are turned from one direction to another to locate him. The sense of sight is very poor, but smell and hearing are keen. The blind plunge of the angry beast may end in the tearing of a boulder out of its place by the horn, the eyes being unable to distinguish objects with clearness. The experience of many hunters was useful to Mr. Dugmore, who

let a charging rhino come at him, made the picture at fifteen yards, after which a shot from the gun of his attendant turned the brute aside. If this plan had failed, it would have been possible for the photographer to escape by a quick leap to one side. The momentum of the rhino's body carries him in one direction. He must slow down in order to change his course. Instead of attacking, the beast will often turn tail and run away.

The speed of a running rhinoceros is astonishing. It never gallops unless wounded, and therefore panic-stricken. The beasts wander long distances in search of water, in seasons of dry weather, and hunters need the best of horses to follow wounded rhinos, so great is their endurance. The cry of one of these frightened animals is a shrill squeal, or a loud snort, as it is about to attack. The male utters a succession of deep grunts, at times, as he feeds.

One hunter tells of a white rhinoceros whose curiosity was so roused by the light of his campfire that it came close up to the tent, and only firebrands, thrown at it, drove it back into the dark.

## AFRICAN ELEPHANTS AT HOME

**I**F YOU and I should ask some great hunter, like Mr. Selous, to tell us what would be a pleasant and safe way to get a good look at some wild elephants, at home in the jungles of Africa, I fancy that he would laugh out loud. Then, seeing our disappointment, he might put on a sober look, and say: "You must go in an airship of some kind. And be sure that you get it insured against accidents of all kinds. For elephants are not expecting to see any people except hunters, who come to kill them. You will have difficulty in making them believe that you are friendly, but merely curious, strangers, if you come tumbling down upon them, out of the sky!" All of which is good advice, and every word true.

But I am sure that stranger things will be happening before many years than sailing over the jungle in an aeroplane, and I shall not be surprised if some of the boys and girls who read these pages have that very pleasure in store for them. They will not have to rely,

after that, on what others have written and told about how wild elephants behave when they are living their own wild life. The things told us by hunters and explorers make us eager to see for ourselves, when the chance comes.

Most of the elephants people see in the menageries are Indian, for in India wild elephants are caught and tamed for just such purposes, and to become beasts of burden. In Africa hunters kill elephants for food, for their ivory tusks, and for sport. It may be impossible to tame a beast so large and fierce. We can but wonder where and how Hannibal got the elephants that formed a part of the great army he sent against the Romans.

The largest African elephant known stood between eleven and twelve feet high, with tusks that measured nearly twelve feet; and the heaviest pair of tusks ever taken weighed two hundred and ninety-three pounds each, with a girth of twenty-six inches at base. The males are larger than the females. The convex forehead, huge ears, and concave back mark this species. The proboscis has a distinctly ringed structure, and ends in two projecting points. Both male and female have tusks, one on each side of the upper jaw. The teeth are grinders, and, during the life of an

individual, six of these are supplied in each half jaw. As the first get worn down by use, it is finally broken or merely shed, and the next one, which gradually moves forward in the jaw, replaces the old one. Others are coming on, working forward, in order. Each one has a long, oval crown, made of vertical ridges of ivory, alternating with cement, and bordered with harder enamel.

The small, short tusks of cow elephants are most valuable because they are the best for making billiard balls. A pair weighing twenty pounds brings a better price than a pair weighing several times as much. "Soft ivory" from East Africa has a higher market value than "hard ivory" from the West Coast.

Two to four hundred elephants could once be counted in the herds as they moved across country. Hunting has greatly reduced these numbers. Only four herds are left in South Africa, and these are saved by Government protection, or they would have been extinct years ago. In the middle country, and near the Nile sources the wilderness is still king, and herds have not yet been so reduced as to need protection other than that which nature affords them. But great quantities of ivory have been taken and exported during the past

twenty years. It is for this that elephants are chiefly hunted.

Sometimes a herd has a tuskless elephant; occasionally a single tusk is seen which never had a mate. These are exceptions to the rule. Broken tusks are common. The end is rubbed down to a smooth chisel point by patient work against the bark of trees. The right tusk is worn down by use till it is shorter than the left one. The negroes of the Sudan call this hard-worked tusk, *hadam*, "the slave."

The young are about as big as a well-grown hog when they are born. The herd, if it is on the march, waits two days for the little chap to get the use of his legs; then the procession advances, the mother helping the baby over hard places, but for the most part keeping it under her own body, where it is protected from danger of being stepped on or prodded by the tusks of clumsy big brothers. Here, too, the little one often refreshes itself with milk from the teats between the fore legs of the mother. In a few weeks it is able to eat tender grass, and is so independent that it earns a good many cuffs and scoldings by rash excursions out from under the mother's body.

It is common for the herd to break up into

small parties which range over the country, separated a mile or two from the rest, but in some sort of communication all the time. A group of old males will be together, and the younger ones with the cows and calves. One bull may go by himself, but the idea that these separated ones are more vicious than the others is denied. The older an elephant the larger his tusks, but with advancing years, his fighting temper subsides. Young bulls and cows are more dangerous than the old bulls.

“How old is he?” Nobody knows surely the age an African elephant attains. It is believed that he reaches maturity in twenty-five years, and lives over a century. Jumbo was an African, and we know how long he was in captivity. But how old was he when captured? Nobody has marked a young elephant in the wild, and seen it again at the end of its days. Some day these things will be worked out as they have been for other animals.



## HOW THE ELEPHANT MAKES A LIVING

**T**HREE things elephants must have: food, drink and shelter. Until the water fails, the herd prefers the dense jungle of "wait-a-bit" thorn trees, hardly ever taller than a good-sized elephant. The sun, beating down on their unprotected heads and backs, does not disturb their comfort at all. The thorns that torture men and horses and form a barrier to progress, the elephants trample under foot or brush aside without noticing, they are so strong, and their hides so thick. Forests of tall trees are not liked by elephants. They will only enter them in order to reach some region beyond the woods, where good feeding grounds are to be found.

When the rainy season comes, the streams and lakes are full, and springs flow, so that there is no lack of water. The plant world revives, and elephants grow fat and lazy if undisturbed by hunters. The herds make their headquarters in open, dry uplands that

at any other season are too dry. Here the elephants feed on the succulent bark and roots of trees and shrubs, but they rarely eat grass. They browse among the tree tops. Besides leaves, they eat with great zest the fruits of various trees. And you never could guess how these great, clumsy animals pick the fruit from a high tree!

One hunter tells of seeing a young bull overthrow a good-sized umglosi tree, full of sweet-tasting fruit, by successive bumps and pushes, using the thick part of his trunk as the bumper, and his whole body as a battering ram. When the ground is wet, these trees are not so solidly held in place by their roots. The moment the tree fell, all the young elephants hurried to it, and began picking off the fruits, one at a time, and carrying them to their mouths. It is astonishing how skilfully and quickly the tip of the trunk did this work.

Tramp, tramp, tramp! The wild elephants are migrating to higher ground, where rains will swell the streams and set the springs flowing, while the lowland jungles are parched with heat. They travel by night, and if need be, by day also. If hunters are after them, they may keep up the march for twenty hours at a stretch, stopping only in the hottest

hours to rest. The elephant takes a long step, and when alarmed quickens its gait into a swinging, or shuffling trot, which wears out its pursuers, horses and men. The trained runners have to exert themselves to keep up with the clumsy giants.

In a panic of fear the elephant breaks into a run; but this gait soon exhausts it, and a damp spot of perspiration shows above each eye, the two pores being in the hollow, and plainly seen. The overheated beast has a strange habit of thrusting its proboscis down its throat, and pumping from its stomach as much as a bucketful of water, which it spouts over its shoulders. If water is scarce, for external use at least, the creature gathers a trunkful of sand, and showers its back with this instead.

When not disturbed, elephants like to climb slowly to the top of high hills, though their poor, little, near-sighted eyes do not give them the reward of seeing the wonderful African scenery that travellers in those wild regions marvel at. It costs some effort to carry their huge bodies up the ragged slopes. Is it for the pleasure of coming down, like an avalanche on the Alps? Their weight gives their bodies tremendous momentum. They

sit on their haunches, and slide, without damage from friction, so thick is their tough skin.

When a stream is reached, too deep for fording, they swim, with evident pleasure if the water is warm. Tail and trunk are held erect. What a funny sight a swimming elephant must be! Sometimes only the trunk is visible above the surface. Through it the submerged beast breathes peacefully, and finally scrambles to his feet on the opposite shore, possibly to rub his wet skin thoroughly by rolling in a mud wallow before proceeding on the journey.

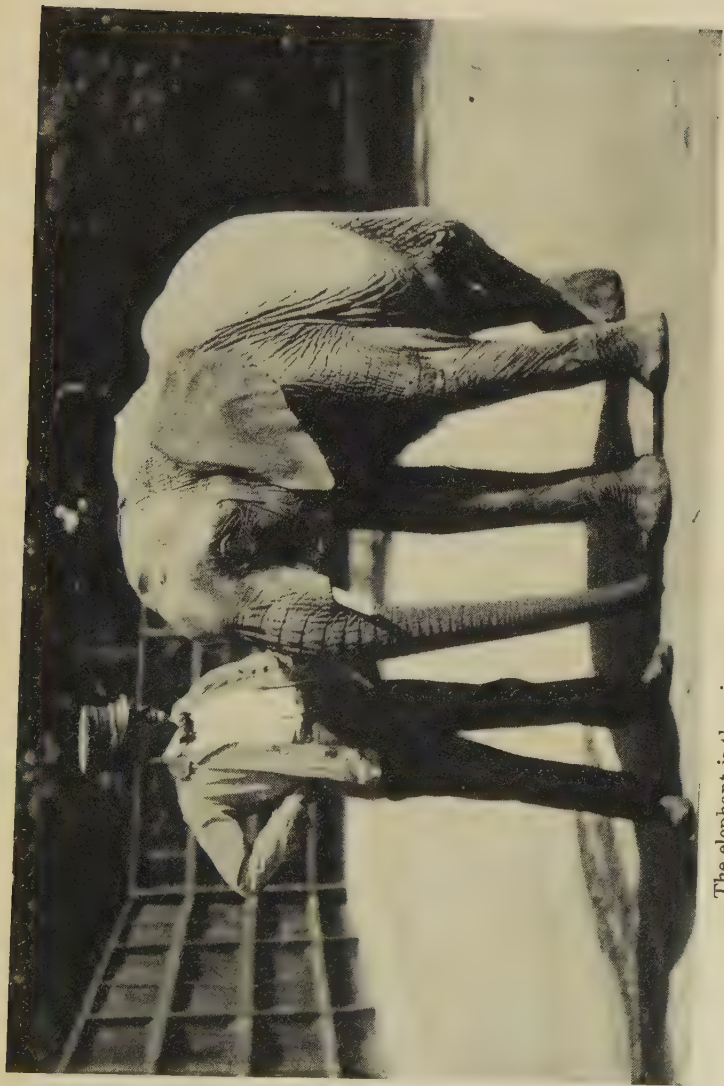
The elephant is a noisy creature in his native jungle. In the herd, the mothers are constantly scolding the youngsters. The babies scream in high, loud, complaining voices. They are answered in deeper tones by their anxious mothers. Deep rumblings and growling throat noises, and snortings through the trunks are made by the feeding members of the herd. If an elephant sees a man moving up toward the herd, it utters a sharp, high-pitched series of angry screams, and charges down upon him without a moment's pause, tail and trumpet held aloft, and ears waving. There is no chance of escape for the hunter who turns and runs. His only safety lies in his

rifle. The ball will check the beast's onset, though it has not hit a vital spot. Once turned aside, the beast loses his advantage. It is quite possible that if the hunter lies low he will escape the eye of his adversary, who returns to the herd, bewildered.

The legs of an elephant are jointed to the body in a way to give the utmost freedom of movement. The fore foot has five toes, but they are so concealed that their presence is shown by the five broad nails. African elephants have either three or four nails on the hind foot. In the Indian species the number is four. The sole of the foot is a thick, leathery pad.

Elephant's foot is considered a great delicacy. It is placed in a pit among hot stones, and roasted until the bones and sinews turn to a jelly-like substance which is dipped out of the leathery covering with spoons. Hunters say it is really delicious.

Palm nuts are a favourite food of elephants. The chief food is the soft inner bark of certain trees, especially the machabel. The elephant may butt down a tree over a foot in diameter of trunk. Saplings only two or three inches through they twist off with their trunks. Another plan, and the most usual one with large trees, is to cut through the bark with the



The elephant is the wisest, most patient and most powerful servant of man





The mother opossum is certainly "wrapped up in her children."



tusks, partially girdling the tree, then loosening the end of the bark layer at one point, seizing it with the trunk, and peeling off a strip that tears out to the end of a high limb. Only the succulent inner layer of these bark strips is eaten. The outer part is discarded.

The horizontal roots of trees are easily located by the elephant's acute sense of smell. Next, the fore feet begin digging away the soil that covers the hidden root. When it is uncovered, the tusk pries it out of the ground, and the sappy portion is separated, by chewing, from the woody fibre, which is not swallowed.

From nine till four, the hottest part of the day, is the elephant's siesta. He rests after a full breakfast that has taken from three till nine. How you would laugh to see him sleeping peacefully, standing upright on his four pillar-like legs, with regular waving and twitching of the great ears, as if to brush away the flies! All the time the scorching sun beats down on his head and back, for he rarely stands under any shelter. Mr. Selous says that the African elephant never lies down, except when it rolls in the mud or water.

What a tiresome thought that a great creature, weighing more than any other beast, should never lie down to rest!

## THE INDIAN ELEPHANT

**A**ND the Lord of the Jungle was Tha, first of the Elephants. He drew the Jungle out of deep waters with his trunk; and where he made furrows in the ground with his tusks, there the rivers ran; and where he struck with his foot, there rose ponds of good water; and where he blew through his trunk, thus, the trees fell. That was the manner in which the Jungle was made by Tha."

It is almost worship — the feeling with which the people of India regard the elephant. No other animal gives his life to service with such complete surrender, such gentleness and such intelligence. African elephants are wild. Nobody attempts to tame them, except occasionally for purposes of exhibition. They are big fellows, and their immense, flapping ears make them the wonder of the menagerie. Their tusks of ivory are often eight feet long.

But in India the elephants are smaller, with shorter, lighter tusks, and smaller ears; with four toes on the hind feet, five on the

fore feet. The head is oblong, with a concave forehead.

You will hear people say in India that an elephant, when he lives free in the jungle, never dies. It is because the bones of dead elephants are not found. Others explain this strange fact by saying that when ready to die the old elephant goes away to some appointed place, far from those parts of the jungle that the eye of man has looked upon, and there lies down to die. Have we not heard that of the caribou in our own country! The rocks of northern India are called by a famous geologist "a great graveyard of fossil elephants." If prehistoric elephants died, probably their descendants are but mortal. But as to the age of an elephant, nobody can be sure, except of the few born in captivity, and the age an elephant may reach is still a matter of estimate and a good deal of guesswork.

The jungle folk guess eighty years as the span of a lifetime, with one hundred and twenty years as the extreme limit. Englishmen who are experienced in the capture of wild elephants for the army, think a century and a half about the limit. Mr. Kipling says: "Seventy is a ripe age for an elephant." Gunda, a big Indian elephant in the New York

Zoölogical Park, was born in 1895. His growth is recorded on a placard in front of his cage. In 1910 he stood eight feet and nine inches high at the shoulder.

Signs of age are read in the ears of elephants, The upper rim does not curl over before the sixth year. At twenty-five years, an elephant is full grown, but is not mature until thirty-five. Forty years after, it should be in good working condition. As age increases the flesh becomes flabby, the bones more prominent, and the skin wrinkled. This shows most plainly on the head. The temples are sunken. The feet are set down heel first, and the gait is uncertain and slow.

When first born a baby elephant weighs about two hundred pounds, and stands about three feet high. His trunk is stiff, and measures close to ten inches. For six months the youngster takes no food but milk, which he gets from his mother's udder, located between the fore legs. Though the young are born between two and three years apart, one elephant will be seen in the jungle with two, and often three calves, and suckling them all, though tender grass is added to the milk diet at six months, and from this time on they graze and browse. But their mother is slow to wean them.

The herd lets the mother elephants and their babies set the pace as they journey. Two days after the calf is born it is able to keep up with the procession, the mother helping it over rough places, holding it with the trunk when streams must be crossed by swimming. Older babies climb on to the mother's back, while she swims, and gradually they learn to swim alone, and like it. No land animal is a more expert swimmer than an elephant. Sanderson tells of a herd of nearly one hundred that crossed a body of water without the loss, or the lagging behind, of one, though they were six hours at a stretch without touching bottom. After resting a little while on a sand bank they proceeded, swimming the remaining distance in three hours.

Before it is two years old the elephant sheds its tusks — the little milk tusks drop out. One by one the grinding teeth slip forward from the back of the jaw, get worn out by use, fall out and are replaced by the one next in line. Though they graze and forage in the rice fields and on other crops of the farmers, elephants do not chew the cud, as cattle do.

Jungle elephants visit salt licks, and eat earth that contains soda. These are medicinal doses, taken by strict vegetarians, whose pas-

tures extend from the low jungle to the forests of the uplands. The rainy season sends them higher and higher into the hill country.

A baby elephant talks to its mother in snuffly throat noises, which are answered in kind. A purring in the throat, with funny squeaking sounds made in the trunk express the comfort and well-being of the grazing animals. If an alarm is sounded, one will express fear or confusion by shrill, brassy trumpeting through the uplifted trunk; another thumps the tip of the trunk on the ground, driving the air out in such a way as to make deep, resonant sounds like the bending of a sheet of tin; another utters a deep roar, made in the lungs; another makes a hoarse grumbling noise in the throat. A wild elephant alone will sometimes terrorize a neighbourhood by charging upon every person he meets on the whole length of a road.

## HOW WILD ELEPHANTS ARE CAUGHT

**I**F YOU are ever asked to go to a camp in Assam, in India, close to the "keddah" (stockade), to see the wild elephants taken out by the "keonkies" (tame elephants), don't decline. It will be the most thrilling experience of your life, with enough danger in it to add a certain zest one never feels when he is safeguarded against all harm.

The government of India sells at auction to the highest bidder the right to hunt wild elephants in the jungle. It is no free-for-all business. One district is leased for one year, and the buyer of the right takes a troop of coolies up into the foothills, and they fell trees to build the stockade. Along about October, the wild elephants are due to come down from the hills to visit the salt licks. Close to one of the best of these springs of salty water the stockade is built, before it is time for the elephants to arrive. The keddah is a pen, fenced with a wall of logs, set close together, driven deep into the ground, braced



with posts on the outside, and roped together besides. A ditch is dug a little inside the wall all around, so that the frightened and angry elephants cannot stand near enough to it to use their full strength upon the wall. The gate is made as strong as the wall and hung so that it drops into place from above by the loosening of ropes.

Next, a fence is made by felling trees on each side of a path leading down to the salt lick. An opening is left on the side from which the elephants are accustomed to come down. Men stationed on platforms built in tree tops outside the stockade watch night and day for the arrival of the elephants. "Clackers" are put up in trees about the salt licks, and men are stationed near with guns. When the herd arrives, the gunners fire blank cartridges, and strings attached to the clackers are pulled so that they make a deafening noise. The elephants stampede in the only direction that isn't full of the terrifying din. The fence guides them to the only silent place, the stockade, into which they plunge and the fall of the huge gate shuts them in.

Finding themselves in a trap does not quiet the nerves of the elephants, nor calm their anger. They rush at the enclosing wall, but

blunder into the ditch that protects it. Men are mounted on top of the stockade, waving torches and thrusting spears into all that can be reached. With trunks held aloft the elephants charge wildly about, trumpeting and trampling on calves that happen to be thrown down in the excitement.

Three days the elephants are without food or water. This weakens and calms them. Then the gate is unfastened and lifted and tame elephants are let in, mounted by men dressed in dark clothing, so as to attract little attention. These men carry great rope nooses. They are ready for hard, dangerous work.

It is a grand spectacle, the stately entrance of the mounted keonkies. Outside the gate they stand ready, while in a solemn chant, three times repeated, the native elephant-catchers call on their gods for success, and freedom from accidents. It is a perilous business, full of surprises. When the chant dies away the gate is lifted, and the keonkies enter, keeping in close ranks, and lining up in front of the gateway, so that none can pass.

Now two men on their keonkies advance and gradually work into the herd until the wild fellow assigned to them is between them. He sees the trick and bolts. Around the

keddah they race, but the intelligence of the trained elephants and their riders combine to overcome him, and, at the first chance, a noose is slipped over his head. The other driver throws his noose, as soon as he can, and the charging elephant soon finds himself out of breath, if he strains on either of these two ropes. The slip nooses must be watched to prevent him from strangling when he first feels them. Gradually the keonkies work their captive over to a tree, to which he is securely tied. The bark has been stripped from all such trees in the keddah, so the ropes will slip, and the elephant cannot exert his whole force on its slippery bole to uproot the tree.

If the captured elephant is a tusker (male) he is probably still in fighting mood. He is left tied to his tree for a day or two, or until he is hungry enough to behave well. Females are often submissive enough to be led out when first roped to the keonkies. One by one the captives are roped and led out, to be taken to the training grounds where buyers come to bid on them.

A wild elephant, coming down from the keddah, is carefully attended by the keonkies, for fear of its bolting. A buyer can save money

by paying only three or four hundred dollars for one of these raw recruits. He turns it over to his drivers to be trained by working with his own elephants. A trained elephant costs a great deal more, of course.

Sometimes a wild male elephant takes a notion to live apart from the herd. Such a solitary chap is called a "goonda," which means, in English, a rogue. He is likely to be very ugly and erratic in habits, suddenly taking the high road, and killing any person he meets; or he may break down a tent, and try to destroy every one and every thing it contains. When the keonkies are escorting their captives from the foothills to the plains, a goonda may stampede the procession, and do a great deal of harm. The Government gives anybody permission to shoot this ugly mischief-maker, and the natives, whose lives he terrorizes, are greatly rejoiced to have him out of the way. Hunters are glad to kill him, for he is usually large, and his tusks make handsome and valuable trophies.



## MARSUPIALIA

The order of pouched mammals.

Animals of low intelligence whose young are born in a very immature state, and carried in the pouch, where each is attached to a milk gland until able to climb in and out of the pouch.

*Families:*

1. Kangaroo.
2. Wombat.
3. Bandicoot.
4. Tasmanian wolf.
5. Opossum.





## THE POUCHED MAMMALS

### THE OPOSSUM

**K**ANGAROOS and other old-fashioned, pouched animals are numerous in Australia. America has just one, the opossum, found in both continents. The Virginia species is the one familiar, nocturnal beast that lives wherever persimmons and pawpaws grow. In the fall they are fat, and the negro has a hereditary appetite for fat 'possum, along about Thanksgiving time.

Dogs trained to hunt coons are just as likely to tree a 'possum busy at his nightly feast. When he drops to the ground, or is dragged off the limb by a firm black hand, he does not run away, but curls up, and pretends to be dead. The darkey cuts a stout stick, splits the end and spreads it to receive the 'possum's rat-like tail. Suspended thus from the stick over the shoulder the beast is carried home, and perhaps fed a week or two longer before the "'possum dinner" is celebrated.

Because he steals chickens the opossum is black-listed by the farmer. The hunter hates him because he consumes the persimmons, those "sugary and delicious lumps of joy," found on the trees in late winter.

Opossums are born in early spring, the brood consisting of from six to a dozen naked, pink babies, a little more than half an inch long. A delicate film covers the eyes and ears, but the nostrils and mouth are open, so that breathing and feeding are possible. The mother opossum carries the family about in her pouch. Does she ever spill one out? Never! for it is firmly attached to one of her teats, and this hold it never loses, until, weeks later, it has its eyes and ears open, and its curiosity aroused. Then it looks out and later ventures to take a turn on its mother's back, holding on by twining its tail around her legs or neck. The growth during these weeks has been rapid, the body is now hairy, and the creatures may truly be called pretty, if ever. They look at you with an expression of placid innocence.

By the time one brood is weaned, another set of babies is born and lifted into the pouch; there they take possession of the teats, but their elder brothers and sisters crawl in and

out, and scramble over the back of the poor, faded mother, who has to carry them, and find food for them until they are as big as rats. No wonder she looks faded and worn out!

"Playing 'possum" was a trick noticed by the colonists when they met the opossum for the first time. In the "Perfect Description of Virginia," published in 1649, occurs this paragraph:

"If a cat has nine lives, this creature surely has nineteen, for if you break every bone in their skin, and mash their skull, leaving them for dead, you may come an hour after and they will be gone quite away; perhaps you may meet them creeping off."

THE END













